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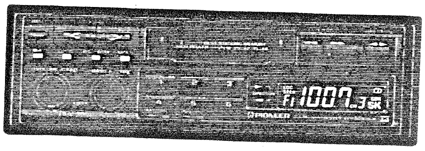
# Service Manual



ORDER NO.
CRT 1158

CASSETTE CAR STEREO WITH FM/MW/LW ELECTRONIC TUNER

# KEH-4090SDK WG
# KEH-4090B EW
# KEH-4090 EW

CASSETE CAR STEREO WITH FM/AM ELECTRONIC TUNER

Note:
- See the separate manual CX-166 (CRT1094) for the cassette mechanism description.
- Dolby and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.
- Noise Reduction System manufactured under license from Dolby Laboratories Licensing Corporation.

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# 1.SPECIFICATIONS

**General**

| | |
|---|---|
| Power source | 14.4 V DC (10.8 – 15.6 V allowable) |
| Grounding system | Negative type |
| Max. current consumption | 7.0 A |
| Dimensions (chassis) | 180(W) × 50(H) × 150(D) mm |
| (front face) | 188(W) × 58(H) × 10(D) mm |
| Weight | 1.4 kg |

**Amplifier**

| | |
|---|---|
| Maximum power output | 25 W × 2/15 W × 4 (EIAJ) |
| Continuous power output | 11 W × 2<br>(1% dist. at 1 kHz) |
| Load impedance | 4 Ω (4 – 8 Ω allowable) |
| Tone controls (bass) | ±10 dB (100 Hz) |
| (treble) | ±10 dB (10 kHz) |
| Loudness contour | |
| (KEH-5090B) | +12 dB (100 Hz), +7 dB (10 kHz) |
| (KEH-4090B, KEH-4090) | +8 dB (100 Hz)<br>(volume: –30 dB) |

**Tape player (KEH-5090B)**

| | |
|---|---|
| Tape | Compact cassette tape (C-30 – C-90) |
| Tape speed | 4.76cm/sec. (+0.14cm/sec., –0.05cm/sec.) |
| Fast forward/rewind time | Approx. 100 sec. for C-60 |
| Wow & flutter | 0.13% (WRMS) |
| Frequency response | Metal: 50 – 17,000 Hz (±3 dB)<br>Normal: 50 – 14,000 Hz (±3 dB) |
| Stereo separation | 45 dB |
| Signal-to-noise ratio | Dolby NR IN: 60 dB (IEC-A network)<br>Dolby NR OUT: 52 dB (IEC-A network) |

**Tape player (KEH-4090B, KEH-4090)**

| | |
|---|---|
| Tape | Compact cassette tape (C-30 – C-90) |
| Tape speed | 4.8 cm/sec. |
| Fast forward/rewind time | Approx. 100 sec. for C-60 |
| Wow & flutter | 0.13% (WRMS) |
| Frequency response | 50 – 14,000 Hz (±3 dB) |
| Stereo separation | 45 dB |
| Signal-to-noise ratio | 52 dB (IEC-A network) |

**FM tuner**

| | |
|---|---|
| Frequency range | 87.5 – 108 MHz |
| Usable sensitivity | 12 dBf (1.1 μV/75 Ω, mono) |
| 50 dB quieting sensitivity | 17 dBf (1.9 μV/75 Ω, mono) |
| Signal-to-noise ratio | 70 dB (IEC-A network) |
| Distortion | 0.3% (at 65 dBf, 1 kHz, stereo) |
| Frequency response | 50 – 15,000 Hz (±3 dB) |
| Stereo separation | 40 dB (at 65 dBf, 1 kHz) |

**MW tuner**

| | |
|---|---|
| Frequency range | 531 – 1,602 kHz |
| Usable sensitivity | 18 μV (25 dB) (S/N: 20 dB) |
| Selectivity | 50 dB (±9 kHz) |

**LW tuner**

| | |
|---|---|
| Frequency range | 153 – 281 kHz |
| Usable sensitivity | 30 μV (30 dB) (S/N: 20 dB) |
| Selectivity | 50 dB (±9 kHz) |

**Note:**
Specifications and the design are subject to possible modification without notice due to improvements.

# 2.USING THE RADIO

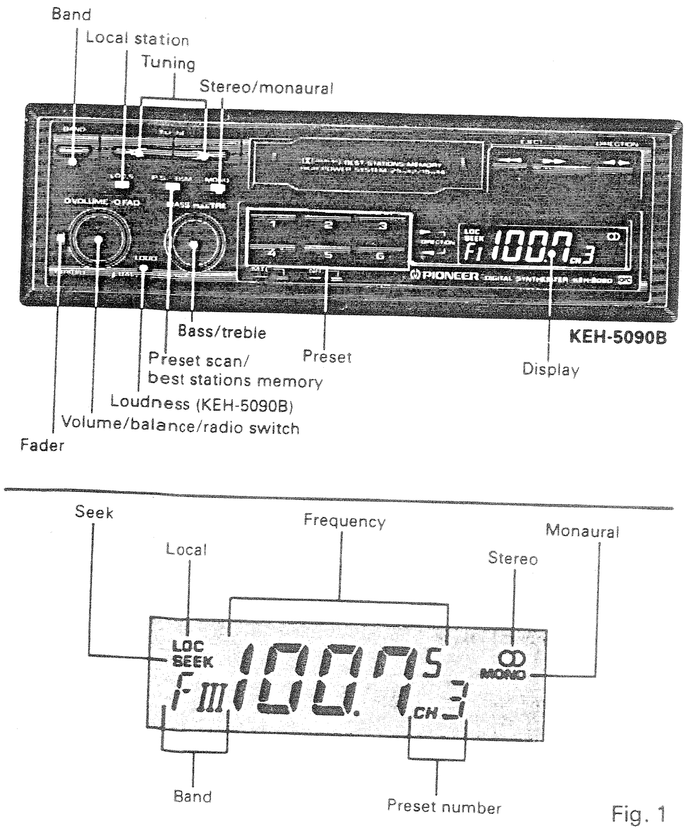


Fig. 1

- **Before attempting operation...**
- Reduce the volume by turning the volume control knob to the left.
- Set the fader control to the left horizontal.

1. Press the radio switch to turn on power and display the frequency.
2. Press the band switch to select the band.
   - Switching between FM and MW/LW is controlled by the band switch. Switching between LW and MW is accomplished using the tuning button. The MW band is from 531 kHz to 1,602 kHz, and the LW band is from 153 kHz to 281 kHz.
3. Press both ends of tuning button and the seek tuning indicator will appear on the display.
4. Press either the left or right side of the tuning button to tune in the desired frequency. (Pressing the right side will increase the frequency.)
5. Adjust the volume and balance. To adjust the balance, first pull the knob until a click is heard. After setting to the desired level, push the knob in again to its original position.
6. Adjust the tone to an appropriate level. To adjust the treble, pull the knob toward you and set it to the desired level.

- **To enter a frequency into the preset memory...**

7. Hold down one of the preset buttons (1-6) for approximately two seconds. The frequency is stored in memory (assigned to the preset button pressed) once the preset number stops flashing on the display.
   Six FM1 frequencies, six FM2 frequencies, six FM3 frequencies and six MW and LW frequencies can be entered.

- **Best Stations Memory Button**

Automatically tunes strong frequencies and assigns them to preset buttons 1 through 6 for one-touch automatic tuning. The best stations memory function is activated by pressing this button for approximately 2 seconds. The best stations memory function is indicated by ——— flashing on the display, and this function can be canceled by pressing the band switch. The frequency display returns once the best stations memory function is complete. The frequency displayed at this time is of the strongest station assigned to preset button 1 by the best stations memory function.

- 6 best (strongest) frequencies are momorized in the 6 preset buttons in the order of their strength, the strongest one being assigned to preset button 1.
- The frequencies previously assigned to the preset buttons are retained when 6 frequencies cannot be located.
- The best stations memory is in operation while ——— is flashing on the display.

- **Stereo/Monaural Switch**

This switch is used to change from stereo to monaural for FM broadcasts, and is usually left in the stereo position. When a stereo broadcast is received, the stereo indicator will illuminate. With the "Automatic Reception Control" (ARC) function, stereo broadcasts can always be enjoyed in their optimal reception mode. If excessive noise is present, pressing this switch allows monaural reception of the broadcast.

- **Local Station Switch**

Pressing this switch increases the seek threshold level so that only relatively strong stations can be tuned in (local indicator will illuminate on the display). Local seek threshold level can be selected among four levels for FM and two levels for MW and LW.
Holding this switch down for approximately 2 seconds and then pressing the right side of the tuning button changes the display form L-1, L-2, L-3 to L-4. Pressing the left side of the tuning button changes the display from L-4, L-3, L-2 to L-1. (L-1 and L-2 for MW/LW). The bigger the number, the higher the seek threshold becomes and only relatively strong stations can be tuned in.

- **Fader Control**

This control is used to adjust the balance between the front and rear speakers when using a 4-speaker system. Turning the control upwards decreases the volume of the rear speakers, while turning it downwards decreases the volume of the front speakers. With 2-speaker systems, set this control to a horizontal position.

- **Loudness Switch (KEH-5090B)**

When playing back a tape or listening to the radio at low volume, the low and high tones are emphasized and more clearly heard by pressing this switch.

- **Auto-Loudness (KEH-4090B, KEH-4090)**

When playing back a tape or listening to the radio at low volume, the low tone is automatically emphasized.

## Seek Tuning

Press both ends of tuning button and tuning to the next higher or lower broadcast on the band can be accomplished automatically by simply pressing either the right or left side of the tuning button. FM frequencies change in 50 kHz steps while those in the MW and LW bands change in 9 kHz steps.

## Preset Scan Tuning

Pressing the preset scan button (CH indicator flashes) causes previously stored frequencies to be tuned in sequentially for eight seconds each. Press again when the desired frequency is tuned in to cancel preset scan tuning.

## Preset Tuning

Pressing the preset button instantly tunes in the frequency programmed in the memory for that button.

## Manual Tuning

When manual tuning is employed, FM frequencies change in 50 kHz steps, LW frequencies change in 1 kHz steps, and MW frequencies change in 9 kHz steps.

1. Press both ends of tuning button and the seek tuning indicator will disappear from the display.
2. Change the frequency by pressing either the left or right side of the tuning button. Pressing the button once will change the frequency one step (see above). Continuously depressing either side of the button will successively change the frequency at the prescribed step.

- **Note on LW Band Seek Tuning**

The following shows changes in LW BAND broadcast frequency steps enacted by WARC/1979. The underlined italic figures indicate changes.

**A. Up to January 1986**
155-164-173-182-191-200-209-218-227-236-245-254-263-272-281

**B. From February 1986**
*153-162-171-180-189*-200-209-218-227-236-245-254-263-272-281

**C. From February 1988**
153-162-171-180-189-*198-207-216-225-234*-245-254-263-272-281

**D. From February 1990**
153-162-171-180-189-198-207-216-225-234-*243-252-261-270-279*

The LW BAND SEEK operations of this unit are performed in 9 kHz steps starting from 155 kHz. In the case of B, the change results in the first five frequencies being shifted (2 kHz each) from A, while the remaining ten are identical to those of A. Consequently, manual tuning (in 1 kHz steps) and seek tuning should be used together to tune in the desired LW broadcast. It is also suggested that your favorite LW stations will be memorized for instant recall.

# 3.USING THE TAPE DECK

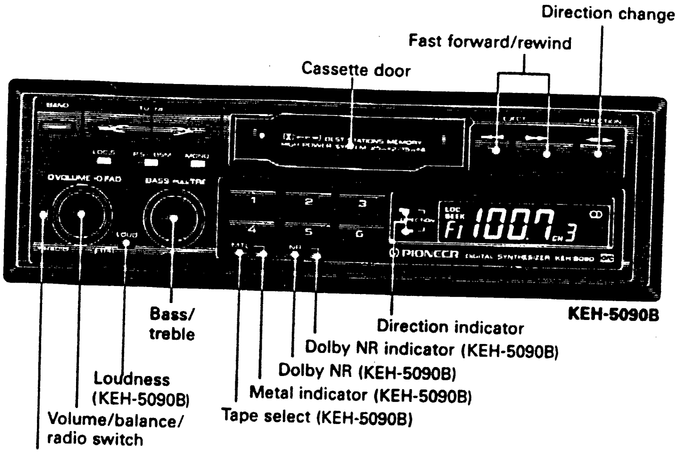


Fig. 2

## ● Before attempting operation...

- Reduce the volume by turning the volume control knob to the left.
- Set the fader control to the left horizontal.

1. Insert a tape into the deck to turn the power on and automatically begin playback. Even if the radio is on, the unit will automatically switch to and begin tape playback.
2. Adjust the volume and balance. To adjust the balance, first pull the knob until a click is heard. After setting to the desired level, push the knob in again to its original position.
3. Adjust the tone to an appropriate level. To adjust the treble, pull the knob toward you and set it to the desired level.
4. When tape playback reaches the end of the tape, playback will automatically switch from the side being played to the opposite side (ie. Side A to Side B or vice versa) (Auto-reverse). To eject the tape during playback, simultaneously press the fast forward and rewind buttons.

- A loose or warped label on a cassette tape may interfere with the eject mechanism of the unit or cause the cassette to become jammed in the unit. Avoid using such tapes or remove such labels from the cassette before attempting use.
- Do not try to eject the cassette immediately after insertion, as it will cause malfunction. Wait a few seconds.
- Be sure to eject the tape when the vehicle's ignition is turned OFF. Leaving the tape in the unit can deform the pinch roller causing wow and flutter during tape playback.

## ● Fast Forward/Rewind

Since the transport can be in either direction, both the left and right high-speed tape transport buttons can be regarded as fast forward/ rewind buttons.

For fast forward, press the high-speed tape transport button that corresponds to the direction that is shown by the direction indicator. When the end of the tape is reached, playback will automatically begin from the opposite side of the tape (Auto-reverse).

For rewind, press the button that is opposite that of the direction shown by the direction indicator. When the end of the tape is reached, playback will automatically begin from the beginning of the same side of the tape (Auto-replay).

Fast forward and rewind can be terminated by pressing the respective opposite high-speed tape transport button.

## ● Direction Change Button

This button is used to switch from one side of the tape to the other (from Side A to Side B or vice versa).

## ● Dolby NR Switch (KEH-5090B)

Press when playing a tape recorded with Dolby NR.

## ● Tape Select Switch (KEH-5090B)

This switch is used to switch to the proper mode for the tape being used and should be depressed when using chrome or metal tapes.

# 4.DISASSEMBLY

## • Case Unit

1. Insert and turn a flat screwdriver to remove case.
2. Remove a screw.
3. Raise case unit to remove.

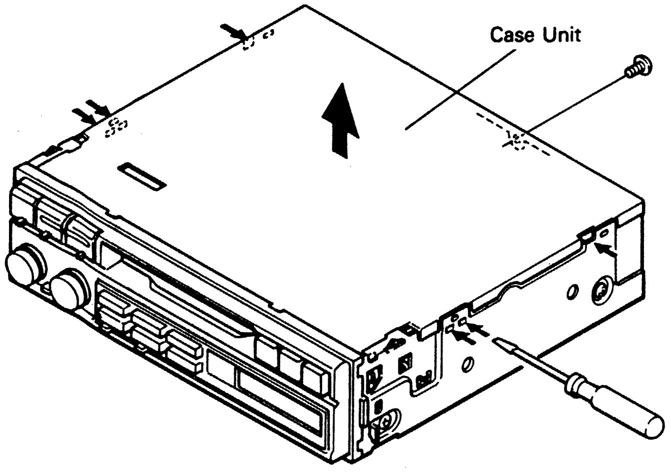


Fig. 3

## • Handle Unit (KEH-5090SDK, 5090B, 5090QR, 4090B)

1. Romove two screws.
2. Remove stoppers of panel at four locations indicated by arrows, and pull out handle unit.

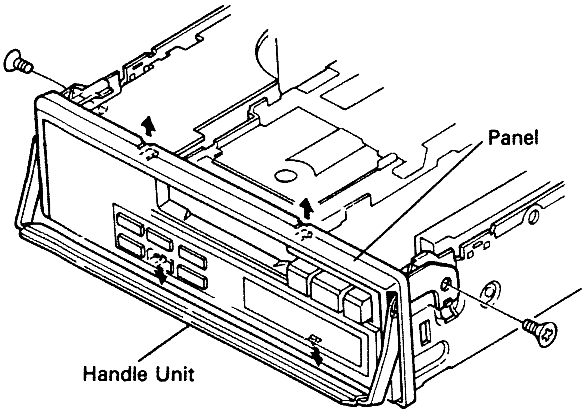

Panel
Handle Unit

Fig. 4

## • Grille assy

1. Remove three knobs.
2. Press tabs at three locations indicated by arrows, and pull out grille assy.

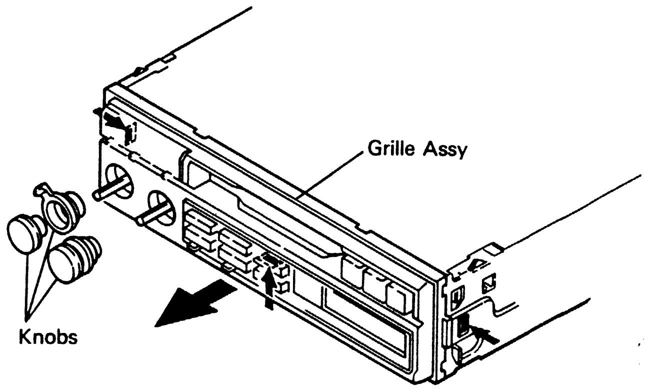

Grille Assy
Knobs

Fig. 5

## • Cassette mechanism assy

1. Disconnect two connectors.
2. Remove four screws, and then remove cassette mechanism assy.

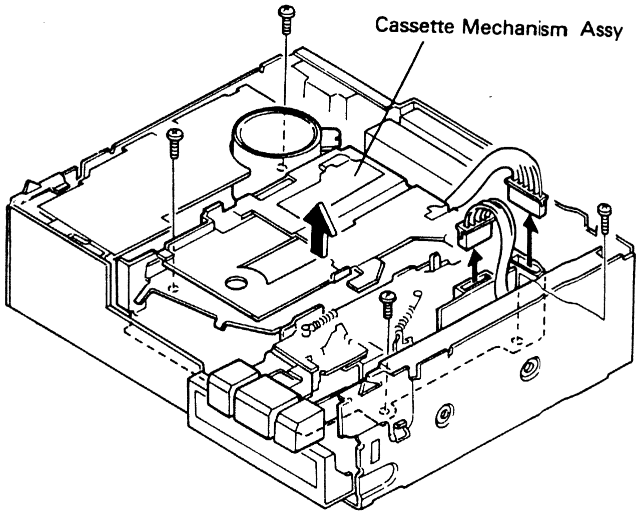
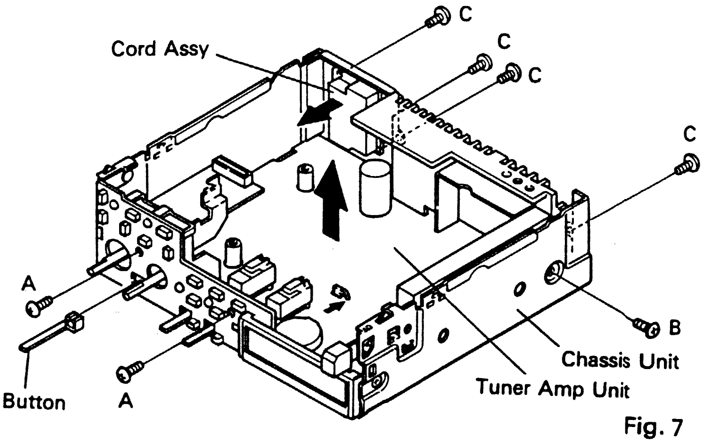

Cassette Mechanism Assy

Fig. 6

## • Chassis unit (Except for KE-4070)

1. Remove two screws A, a screw B and four screws C.
2. Unbend tab at location indicated by arrow.
3. Raise up on tuner amp unit to remove it from chassis unit. At this time, disconnect cord from chassis unit.



C
Cord Assy
C
C
C
A
B
Chassis Unit
Tuner Amp Unit
Button
A

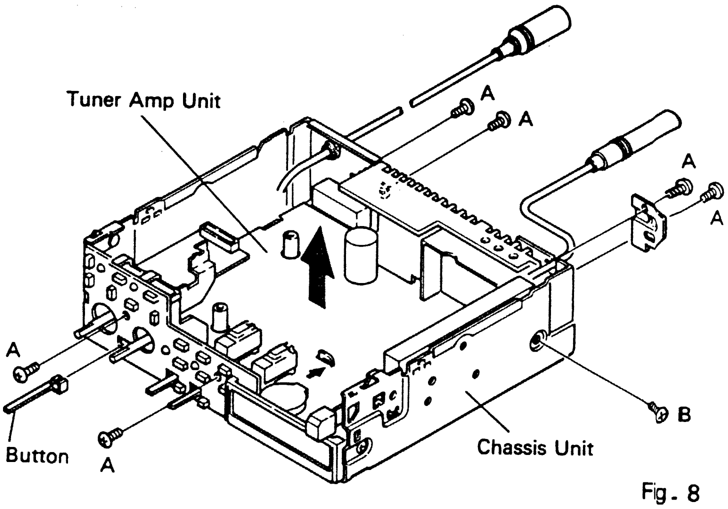
Fig. 7

### Note:

When replacing the cord assy after it has been removed, apply some paint to screw after screwing it in to prevent it from loosening.

## • Chassis unit (KEH-4070)

1. Remove six screws A and a screw B.
2. Raise up on tuner amp unit to remove it from chassis unit.

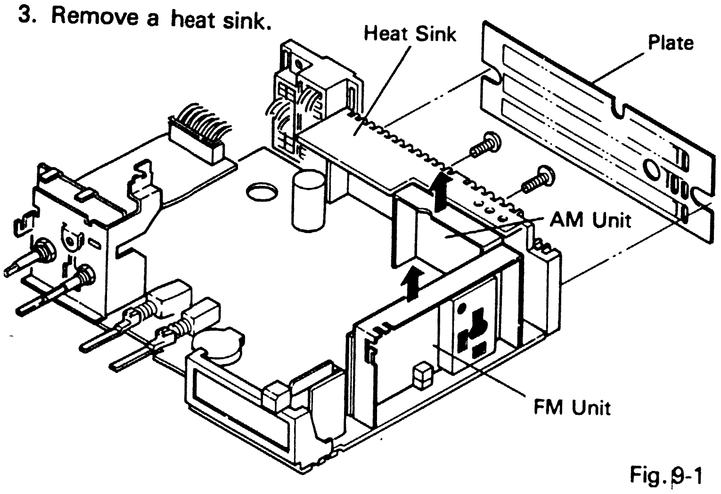


Tuner Amp Unit
A
A
A
A
A
B
Chassis Unit
Button
A

Fig. 8

## • Heat Sink

1. Remove a plate.
2. Remove two screws.
3. Remove a heat sink.

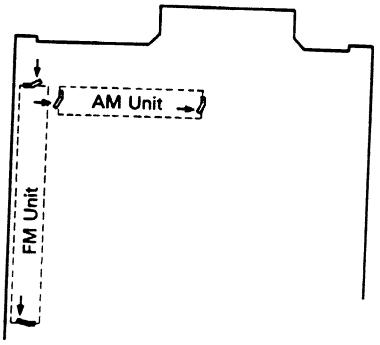


Heat Sink
Plate
AM Unit
FM Unit

Fig. 9-1

## • FM unit/AM unit (Fig 9-2)

1. Remove solder at location indicated by arrows.
2. Remove solders and unbend tabs on back of each unit straight.
3. Pull out unit as shown in Fig. 9-1



AM Unit
FM Unit

Fig. 9-2

# 5.BLOCK DIAGRAM

- KEH-5090SDK

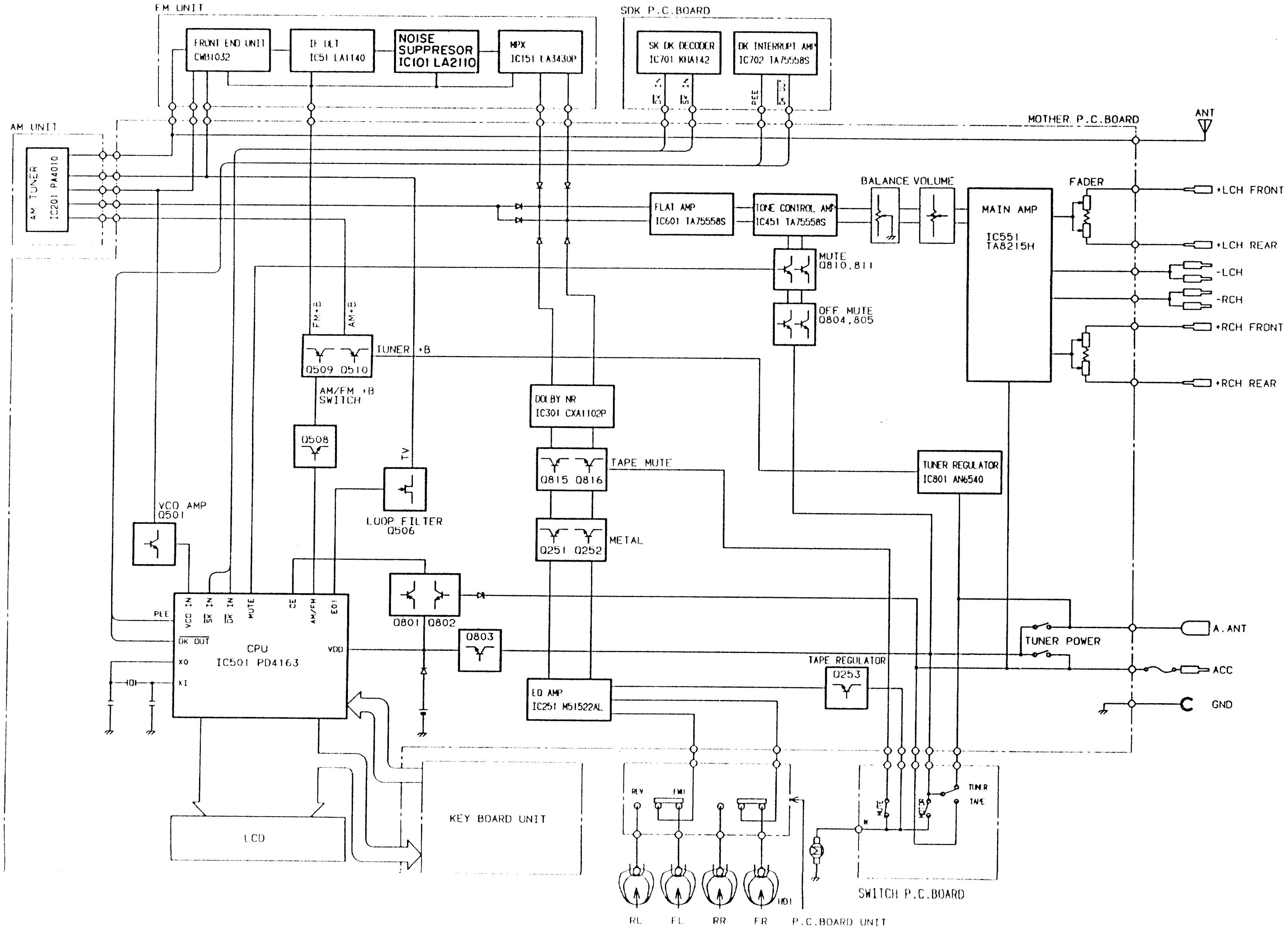
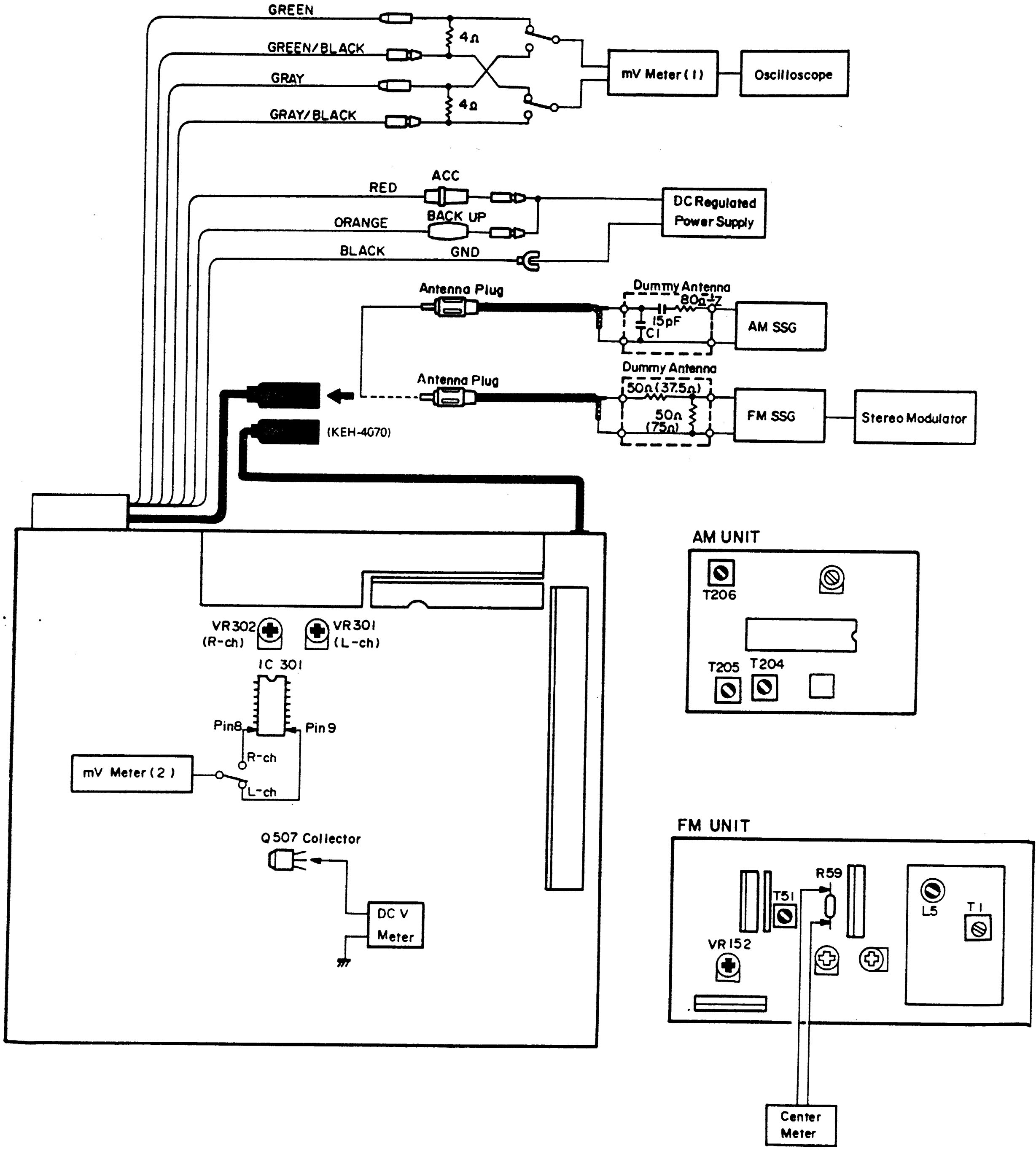

FM UNIT
FRONT END UNIT
CWB1032
IF DET
IC51 LA1140
NOISE SUPPRESOR
IC101 LA2110
MPX
IC151 LA3430P
SDK P.C.BOARD
SK DK DECODER
IC701 KHA142
DK INTERRUPT AMP
IC702 TA75558S
PEE
MOTHER P.C.BOARD
ANT
AM UNIT
AM TUNER
IC201 PA4010
BALANCE VOLUME
FADER
FLAT AMP
IC601 TA75558S
TONE CONTROL AMP
IC451 TA75558S
MAIN AMP
IC551
TA8215H
+LCH FRONT
+LCH REAR
-LCH
-RCH
+RCH FRONT
+RCH REAR
MUTE
Q810,811
OFF MUTE
Q804,805
FM+B
AM+B
TUNER +B
Q509 Q510
AM/FM +B
SWITCH
Q508
TV
LOOP FILTER
Q506
DOLBY NR
IC301 CXA1102P
TAPE MUTE
Q815 Q816
METAL
Q251 Q252
TUNER REGULATOR
IC801 AN6540
VCO AMP
Q501
PEE
VCO IN
SK IN
DK IN
MUTE
CE
AM/FM
EO1
DK OUT
XO
XI
CPU
IC501 PD4163
VDD
Q801 Q802
Q803
TAPE REGULATOR
Q253
EQ AMP
IC251 M51522AL
TUNER POWER
A.ANT
ACC
GND
LCD
KEY BOARD UNIT
REV
FWD
RL
FL
RR
FR
H101
P.C.BOARD UNIT
MUTE
TUNER
TAPE
SWITCH P.C.BOARD

Fig. 10

# 7.ADJUSTMENT

## • Connection Diagram

**NOTICE:**
Select C1 so that total capacity of 80pF is attained from the direction of the receiver jack.
Z: Output impedance of SSG.



GREEN
GREEN/BLACK
GRAY
GRAY/BLACK
4Ω
4Ω
mV Meter (1)
Oscilloscope
ACC
RED
BACK UP
ORANGE
BLACK
GND
DC Regulated Power Supply
Antenna Plug
Dummy Antenna
80Ω-Z
15pF
C1
AM SSG
Antenna Plug
Dummy Antenna
50Ω (37.5Ω)
50Ω (75Ω)
FM SSG
Stereo Modulator
(KEH-4070)
VR302 (R-ch)
VR301 (L-ch)
IC 301
Pin8
Pin 9
R-ch
L-ch
mV Meter (2)
Q507 Collector
DC V Meter
AM UNIT
T206
T205
T204
FM UNIT
R59
T51
VR152
L5
T1
Center Meter

Fig. 13

# 6.CONNECTION

**Note:**

- To avoid shorts in the electrical system, be sure to disconnect the battery ⊖ cable before beginning installation.
- Replace fuses only with the types stipulated on the fuse holder.
- Be sure to properly connect the color coded leads. Failure to do so can cause malfunctions.
- Since a unique BPTL circuit is employed, never wire so the speaker leads are directly grounded or the left and right speaker ⊖ leads are common.
- Speakers connected to this unit must be high-power type possessing maximum input of at least 25 W and impedance of 4 to 8 ohms. Connecting speakers with output and/or impedance values other than those noted here can damage the speakers.

## 2-speaker system

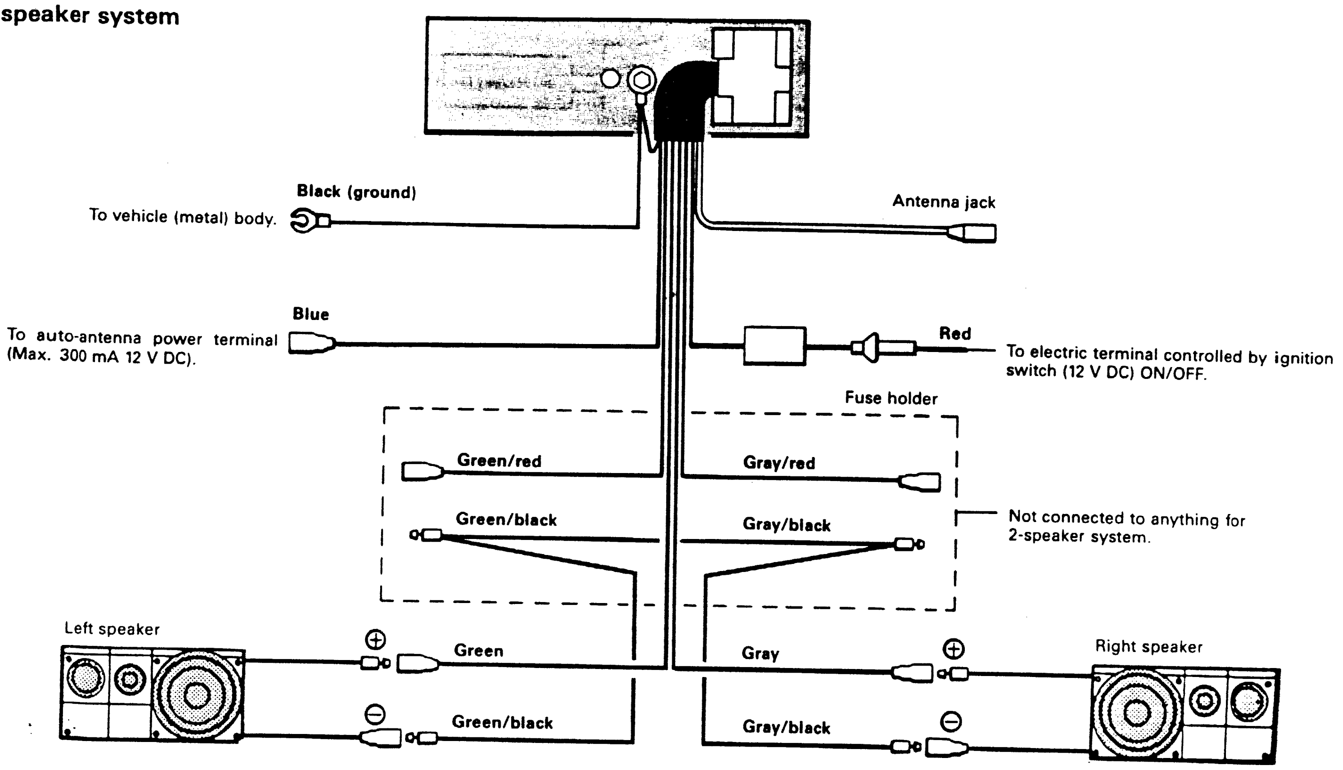

Black (ground)
To vehicle (metal) body.
Antenna jack
Blue
To auto-antenna power terminal (Max. 300 mA 12 V DC).
Red
To electric terminal controlled by ignition switch (12 V DC) ON/OFF.
Fuse holder
Green/red
Gray/red
Green/black
Gray/black
Not connected to anything for 2-speaker system.
Left speaker
⊕
Green
Gray
⊕
Right speaker
⊖
Green/black
Gray/black
⊖

Fig. 11

## 4-speaker system

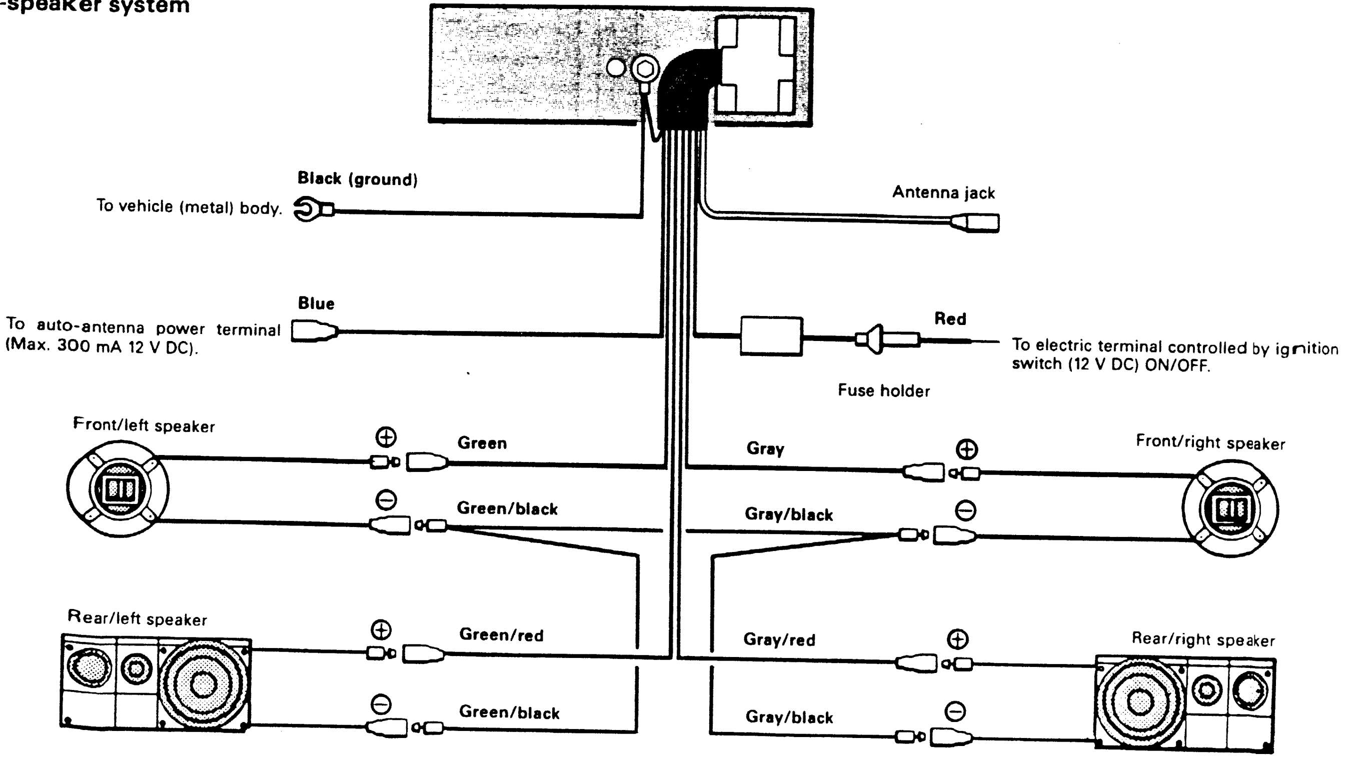

Black (ground)
To vehicle (metal) body.
Antenna jack
Blue
To auto-antenna power terminal (Max. 300 mA 12 V DC).
Red
To electric terminal controlled by ignition switch (12 V DC) ON/OFF.
Fuse holder
Front/left speaker
⊕
Green
Gray
⊕
Front/right speaker
⊖
Green/black
Gray/black
⊖
Rear/left speaker
⊕
Green/red
Gray/red
⊕
Rear/right speaker
⊖
Green/black
Gray/black
⊖

Fig. 12

## 7. 1 MW/LW ADJUSTMENT (WG, EW)

| | No. | AM SSG(400Hz,30% ) | | Displayed Frequency (kHz) | Adjusting Point | Adjustment Method (Switch Position) |
|---|---|---|---|---|---|---|
| | | Frequency(kHz) | Level(dB) | | | |
| Tuning Volt | 1 | (MW MODE) | | 1,602 | — | Verify that DC V Meter is less than 6.5V |
| | 2 | (LW MODE) | | 153 | — | Verify that DC V Meter is more than 2.0V |
| IF | 1 | 999 | 20−25 | 999 | T204,205,<br>206 | mV Meter(1):Maximum |

## 7. 2 AM ADJUSTMENT (ES) *:When tuning step at 10kHz.

| | No. | AM SSG(400Hz,30% ) | | Displayed Frequency (kHz) | Adjusting Point | Adjustment Method (Switch Position) |
|---|---|---|---|---|---|---|
| | | Frequency(kHz) | Level(dB) | | | |
| Tuning Volt | 1 | | | 1,602<br>*(1,620) | — | Verify that DC V MeterV is less than 6.5V |
| | 2 | | | 531<br>*(530) | — | Verify that DC V Meter is more than 2.0V |
| IF | 1 | 999<br>*(1,000) | 20−25 | 999<br>*(1,000) | T204,205,<br>206 | mV Meter(1):Maximum |

## 7. 3 FM ADJUSTMENT ※ Stereo MOD.: 1kHz,L+R=90% , Pilot=10%

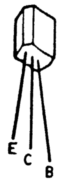
| | No. | FM SSG(400Hz,100%) | | Displayed Frequency (MHz) | Adjusting Point | Adjustment Method (Switch Position) |
|---|---|---|---|---|---|---|
| | | Frequency(MHz) | Level(dB) | | | |
| IF | 1 | 98.1 Unmodulated | 60 | 98.1 | T51 | Center Meter:0 |
| Front End | 1 | | | 108.0 | L5 | DC V Meter:7.4V |
| | 2 | | | 87.5 | — | Verify that DC V Meter is more than 0.7V |
| | 3 | 98.1 | 5−10 | 98.1 | T1 | mV Meter(1):Maximum |
| ARC | 1 | 98.1※ | 35 | 98.1 | VR152 | mV Meter(1):Separation 5dB |

## 7. 4 DOLBY NR ADJUSTMENT (5090SDK, 5090B, 5070QR)

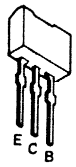
| No. | Cassette Tape | Adjusting Point | Adjustment Method (Switch Position) |
|---|---|---|---|
| 1 | NCT-150(400Hz,200nwb/m) | VR301(Lch)VR302(Rch) | mV Meter(2):-10dBs±1dB<br>(DOLBY NR Switch:OFF)<br>(METAL Switch:OFF) |

## • IC s and Transistors

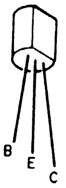
2SA 1048
2SA 1150
2SC 1740S
2SC 2458
2SC 3113



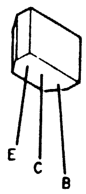
2SB 1243
2SD 1919
2SD 1864



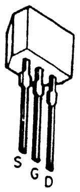
2SC 2498



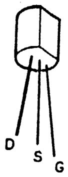
2SD 1468S



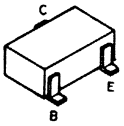
2SK 330



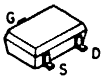
2SK 435



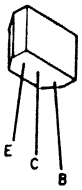
2SA 1162
2SA 1179
2SC 2712
2SD 601



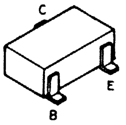
2SJ 106



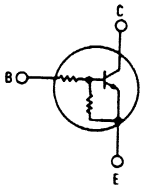
DTC 124 ES
DTC 144 ES
DTC 314 TS



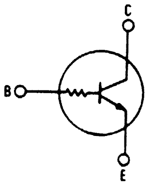
DTC 124 EK



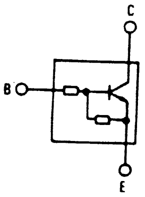
DTC 124 ES
DTC 144 ES



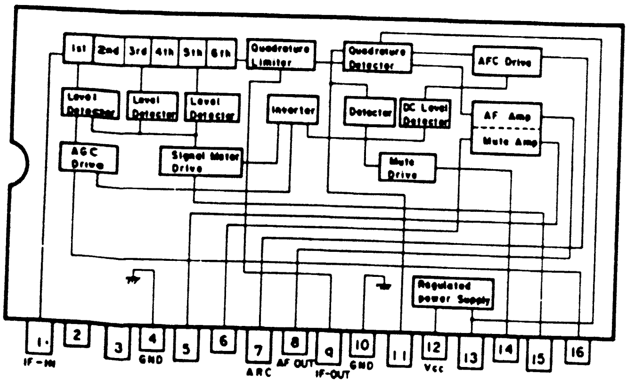
DTC 314 TS



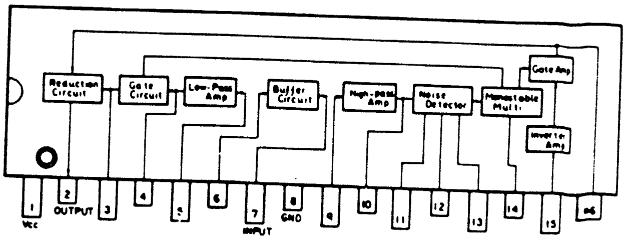
DTC 124 EK



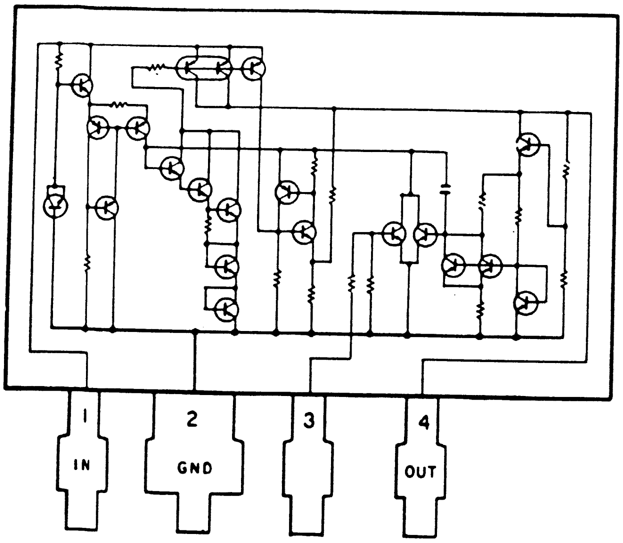
LA1140B


1st
2nd
3rd
4th
5th
6th
Quadrature Limiter
Quadrature Detector
AFC Drive
Level Detector
Level Detector
Level Detector
Inverter
Detector
DC Level Detector
AF Amp
Mute Amp
AGC Drive
Signal Meter Drive
Mute Drive
Regulated power Supply
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
IF-IN
GND
ARC
AF OUT
IF-OUT
GND
Vcc

LA2110

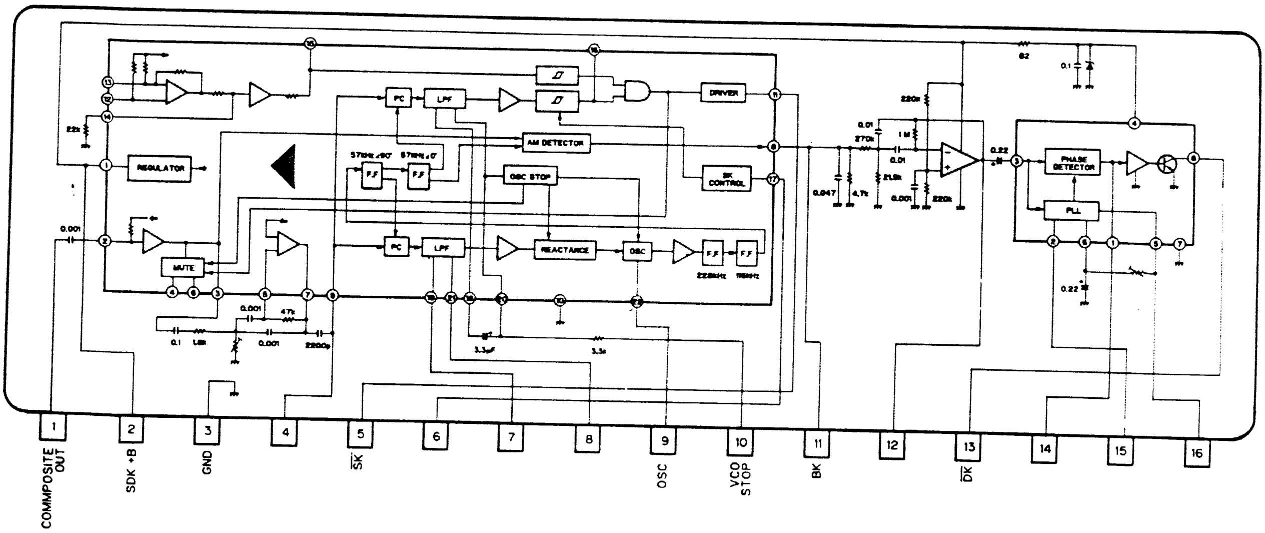

Reduction Circuit
Gate Circuit
Low-Pass Amp
Buffer Circuit
High-pass Amp
Noise Detector
Monostable Multi.
Gate Amp
Inverter Amp
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
Vcc
OUTPUT
INPUT
GND

**AN6540**



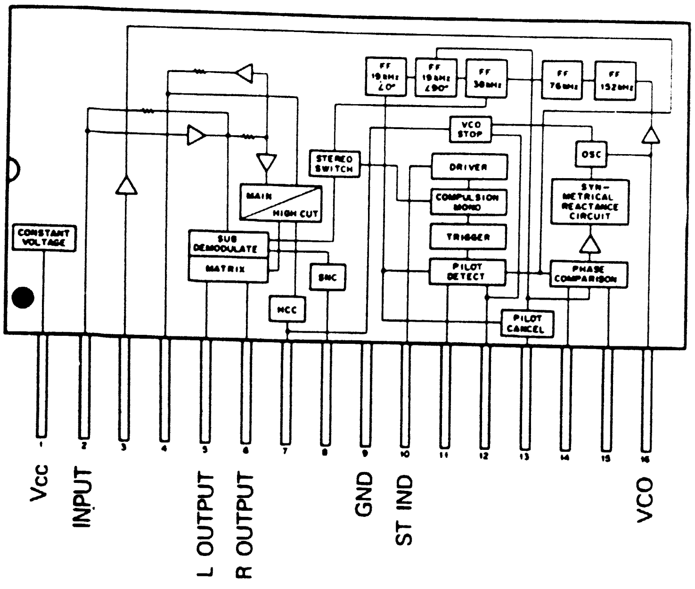
1
IN
2
GND
3
4
OUT

**KHA142**



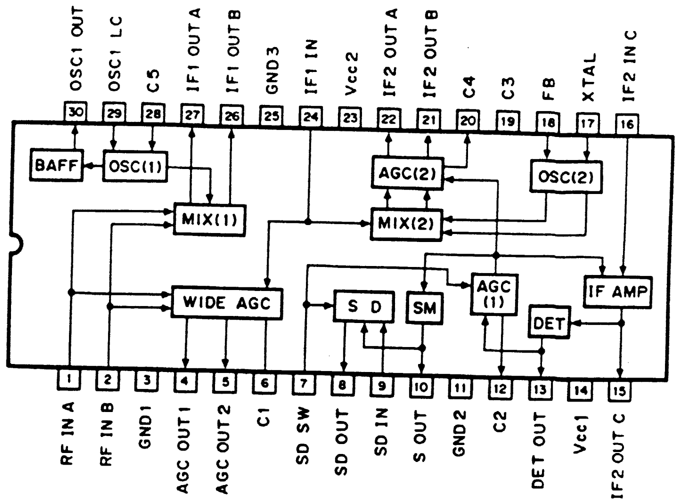
REGULATOR
MUTE
PC
LPF
AM DETECTOR
DRIVER
SK CONTROL
OSC STOP
F.F
57kHz∠90°
57kHz∠0°
REACTANCE
OSC
228kHz
19kHz
PHASE DETECTOR
PLL
22k
0.001
0.1
1.8k
0.001
47k
2200p
3.3μF
3.3k
82
0.1
220k
0.01
270k
1M
0.01
21.8k
0.047
4.7k
0.001
220k
0.22
0.22
1
COMMPOSITE OUT
2
SDK +B
3
GND
4
5
SK
6
7
8
9
OSC
10
VCO STOP
11
BK
12
13
DK
14
15
16

### LA3430P



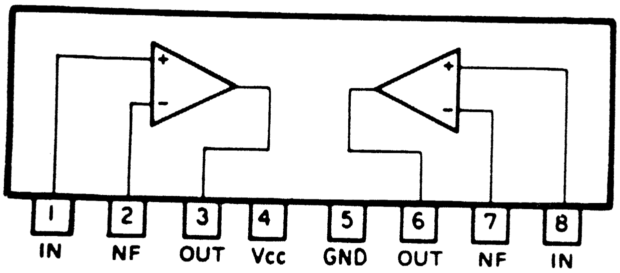
CONSTANT VOLTAGE
MAIN
HIGH CUT
SUB DEMODULATE
MATRIX
HCC
SNC
STEREO SWITCH
FF 19kHz ∠0°
FF 19kHz ∠90°
FF 38kHz
FF 76kHz
FF 152kHz
VCO STOP
DRIVER
COMPULSION MONO
TRIGGER
PILOT DETECT
PILOT CANCEL
OSC
SYN-METRICAL REACTANCE CIRCUIT
PHASE COMPARISON
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
Vcc
INPUT
L OUTPUT
R OUTPUT
GND
ST IND
VCO

### PA4010



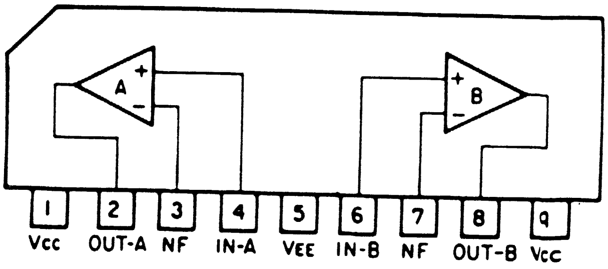
OSC1 OUT
OSC1 LC
C5
IF1 OUT A
IF1 OUT B
GND3
IF1 IN
Vcc2
IF2 OUT A
IF2 OUT B
C4
C3
FB
XTAL
IF2 IN C
30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
BAFF
OSC(1)
MIX(1)
AGC(2)
MIX(2)
OSC(2)
WIDE AGC
S D
SM
AGC (1)
IF AMP
DET
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
RF IN A
RF IN B
GND1
AGC OUT 1
AGC OUT 2
C1
SD SW
SD OUT
SD IN
S OUT
GND 2
C2
DET OUT
Vcc1
IF2 OUT C

### M51522AL



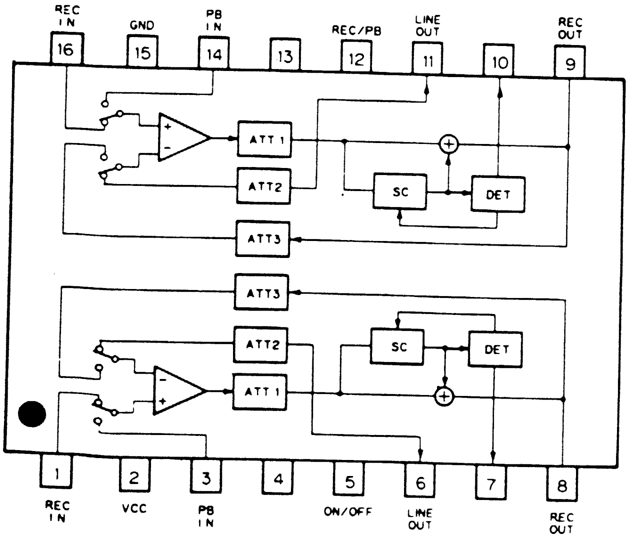
+
-
+
-
1
2
3
4
5
6
7
8
IN
NF
OUT
Vcc
GND
OUT
NF
IN

### TA75558S



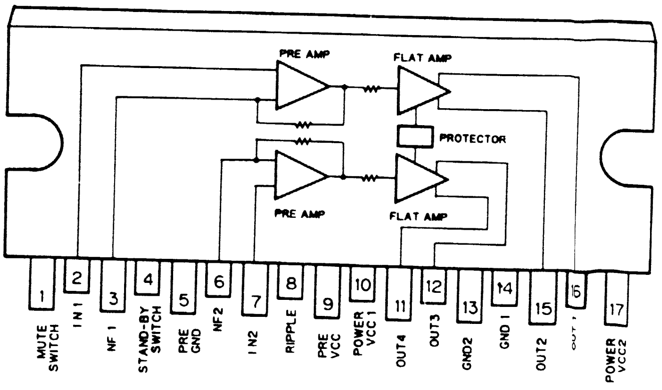
A
+
-
B
+
-
1
2
3
4
5
6
7
8
9
Vcc
OUT-A
NF
IN-A
VEE
IN-B
NF
OUT-B
Vcc

### CXA1102P



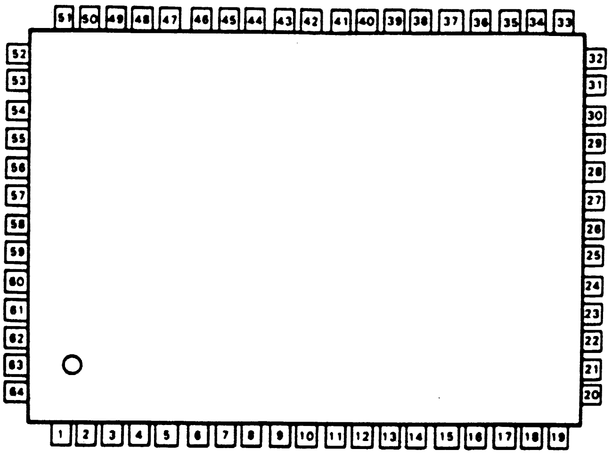
REC IN
GND
PB IN
REC/PB
LINE OUT
REC OUT
16
15
14
13
12
11
10
9
+
-
ATT 1
ATT2
ATT3
SC
DET
ATT3
ATT2
ATT 1
SC
DET
-
+
1
2
3
4
5
6
7
8
REC IN
VCC
PB IN
ON/OFF
LINE OUT
REC OUT

### TA8215H



PRE AMP
FLAT AMP
PROTECTOR
PRE AMP
FLAT AMP
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
MUTE SWITCH
IN1
NF1
STAND-BY SWITCH
PRE GND
NF2
IN2
RIPPLE
PRE VCC
POWER VCC1
OUT4
OUT3
GND2
GND1
OUT2
OUT1
POWER VCC2

*PD4163



*IC's marked by * are MOS type.
Be careful in handling them because they are very liable to be damaged by electrostatic induction.*

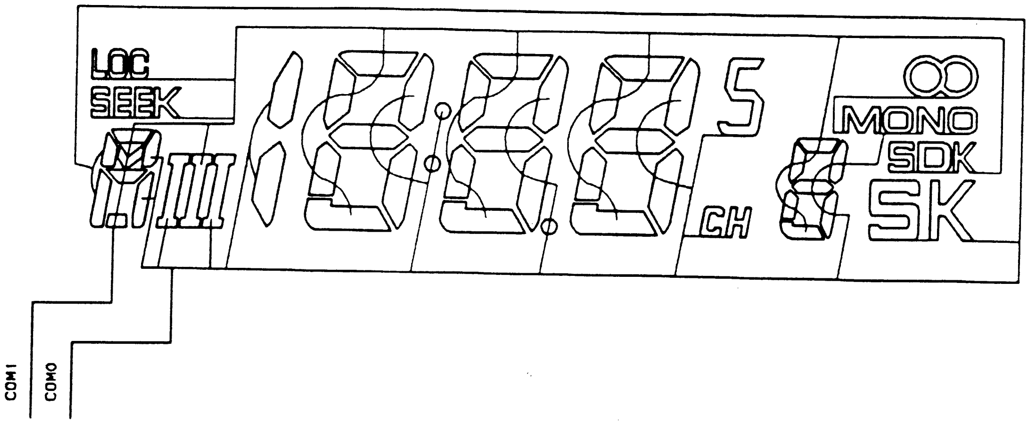
## ●Pin Functions

<table>
<tr><th>Pin No.</th><th>Pin Name</th><th>I/O</th><th>Function and Operation</th></tr>
<tr><td>1</td><td>NC</td><td>–</td><td>No. connected to internal chips.</td></tr>
<tr><td>2<br>3</td><td>EO1<br>EO2</td><td>Output<br>CMOS<br>3 state</td><td>Pll error output. H level output by these terminals when division of local oscillator frequency (VCO output) is higher than reference frequency. L level output when lower. This output is applied to a varactor diode, via an external low pass filter. EO1 and EO2 output identical waveforms.</td></tr>
<tr><td>4<br>8</td><td>GND<br>GND</td><td>–<br>–</td><td>GND terminal</td></tr>
<tr><td>5</td><td>AM IN</td><td></td><td>Not used.</td></tr>
<tr><td>6</td><td>VCO IN</td><td>Input</td><td>AM: Inputs 0.6 – 15 MHz (0.3 Vp-p MIN) local oscillator reference frequency (VCO output).<br>This terminal is active when direct division system is selected.<br>FM: Inputs 15 – 150 MHz (0.5 Vp-p MIN) local oscillator reference frequency (VCO output).<br>This terminal is active when swallow counter method is selected.</td></tr>
<tr><td>7</td><td>CE</td><td>Input</td><td>Device signal input. H level during normal device operation, L level when device is not being used. PLL is in disable status while this terminal is L level. For models without clocks, internal clock and CPU operation is halted while this terminal is L level, and memory is maintained by low demand current (10 μA MAX). Change of CE terminal from L to H results in device reset and the program to start from address 0.</td></tr>
<tr><td>9<br>10</td><td>FM/AM<br>LW</td><td>Output<br>CMOS<br>Pushpull</td><td>Power supply switching output terminal from tuner. Output as illustrated in following table according to outputs of two terminals.
<table>
<tr><th>BAND / PIN</th><th>FM</th><th>MW</th><th>LW</th></tr>
<tr><td>FM/AM</td><td>H</td><td>L</td><td>L</td></tr>
<tr><td>LW</td><td>L</td><td>L</td><td>H</td></tr>
</table></td></tr>
<tr><td>11</td><td>MUTE</td><td>Output<br>CMOS<br>Pushpull</td><td>Mute output. Output for elimination of shock noise when PLL lock is released.<br>Active when high.</td></tr>
<tr><td>12</td><td>$\overline{\text{DK}}$ IN</td><td>Input</td><td>Inputs message recognition signal (DK) sent during traffic information broadcasts only. Since the DK signal is sent by amplitude modulation of a 57 kHz subcarrier wave by 125 Hz, it counts the input signals in accordance with the program. A DX signal is judged as being preset when 125 Hz is not detected twice consecutively. DK signal is judged as not being preset when 125 Hz is not detected 4 times consecutively.<br>An interrupt operation is performed when a DK signal is judged as being present. This count is only performed in the SDK mode.</td></tr>
<tr><td>13</td><td>$\overline{\text{SK}}$ IN</td><td>Input</td><td>Determines whether traffic information is being broadcast and inputs a broadcast detect signal (SK). Broadcast is detected when input signal is L level, and "SK" indicator is displayed. Besides being used as the SDK mode auto tuning stop signal, SK input controls the SK mode and SK alarm functions.</td></tr>
</table>

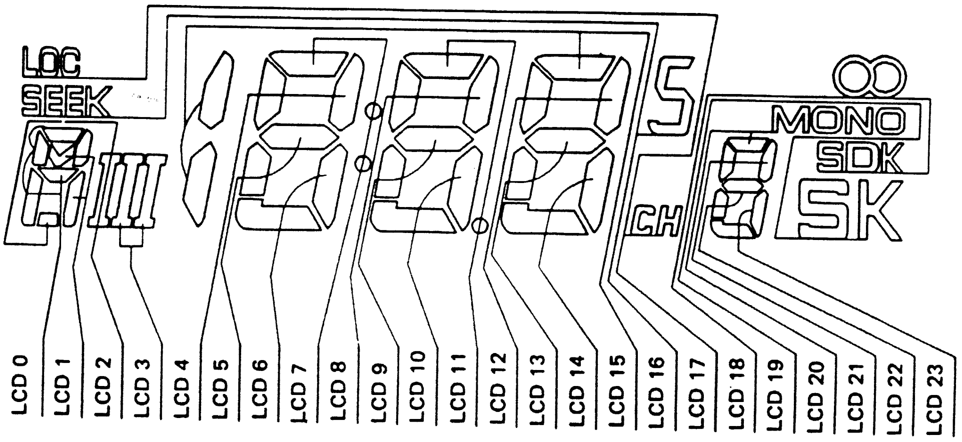
<table>
<tr><th>Pin No.</th><th>Pin Name</th><th>I/O</th><th>Function and Operation</th></tr>
<tr><td>14</td><td>$\overline{\text{ST}}$</td><td>Input</td><td>Inputs stereo broadcast detection signal. Stereo is detected when input signal is L level, and "ST" indicator is displayed. Display is cleared when input signal is at H level. "ST" indicator is OFF during mute signal output.</td></tr>
<tr><td>15</td><td>TAPE</td><td>Input</td><td>Tape signal input terminal. Since this terminal is A/D (analog/digital) input, 2.461 V and above is the H level tape mode.</td></tr>
<tr><td>16</td><td>IF</td><td>Input</td><td>MW, LW band center frequency input terminal.</td></tr>
<tr><td>17</td><td>SD</td><td>Input</td><td>Judges whether or not a broadcast is present during auto tuning. A broadcast is judged as being present when L level is input.</td></tr>
<tr><td>18</td><td>SI</td><td>Input</td><td>Not used</td></tr>
<tr><td>19<br>22</td><td>NC</td><td></td><td>Not used</td></tr>
<tr><td>23</td><td>$\overline{\text{SEEK}}$</td><td>Output<br>CMOS</td><td>"L" level: SEEK, BSM, BSA and PSCN</td></tr>
<tr><td>24<br>25</td><td>XO<br>XI</td><td>Input<br>CMOS</td><td>Quartz oscillator terminal connection terminal. 4.5 MHz quartz crystal used.</td></tr>
<tr><td>26<br>58</td><td>VDD<br>VDD</td><td></td><td>Device power supply terminal. 5V ± 10% voltage supplied.</td></tr>
<tr><td>27</td><td>PEE</td><td>Output<br>CMOS</td><td>Alarm output terminal. Alarm output when SK in SDK mode remains at H level continuously for more than 30 seconds.</td></tr>
<tr><td>28</td><td>MONO</td><td>Output<br>CMOS</td><td>Controlled by MONO key. L level for MONO, H level output for AUTO.</td></tr>
<tr><td>29</td><td>DK OUT</td><td></td><td>Controlled by DK IN (terminal # 12) input signal. L level output when DK IN input signal is detected as 125 Hz while SK IN (terminal # 13) input is L level. Since DK IN measurement operation is only performed in SDK mode, terminal is always H in SDK mode except under above noted conditions.</td></tr>
<tr><td>30<br>31</td><td>LOCH<br>LOCL</td><td>Output<br>CMOS</td><td>Halt sensitivity switching terminals controlled by LOC and BSM keys.
<table>
<tr><th></th><th>DX·SEEK (PSCN)</th><th>LOC·SEEK</th><th>BSM-L</th><th>BSM-M (AM)</th></tr>
<tr><td>LOCH</td><td>L</td><td>L</td><td>L</td><td>L</td></tr>
<tr><td>LOCL</td><td>L</td><td>H</td><td>L</td><td>H</td></tr>
</table>
<table>
<tr><th></th><th>BSM-H</th><th>During broadcast reception</th></tr>
<tr><td>LOCH</td><td>H</td><td>L</td></tr>
<tr><td>LOCL</td><td>H</td><td>L</td></tr>
</table>
</td></tr>
<tr><td>32<br>~<br>55</td><td>LCD23<br>~<br>LCD0</td><td>Output<br>CMOS</td><td>Segment signal output terminal to LCD. LCD display performed using COM0, COM1 matrices.</td></tr>
<tr><td>48<br>~<br>55</td><td>KS7<br>~<br>KS0</td><td>Output<br>CMOS</td><td>Key return signal source output terminal.</td></tr>
<tr><td>56<br>57</td><td>COM0<br>COM1</td><td>Output<br>CMOS</td><td>Common signal to LCD. GND, 1/2VDD, VDD values (5 ms interval) output at 100 Hz cycle. Segments between these terminals and LCD0 – LCD23 with ± VDD potential difference are lit.</td></tr>
<tr><td>59<br>~<br>62</td><td>K3<br>~<br>K0</td><td>Input</td><td>Key matrix input terminal.</td></tr>
<tr><td>63</td><td>S.L.</td><td>Input</td><td>Station level analog voltage input. Used for broadcast detection in MW, LW band auto tuning.</td></tr>
<tr><td>64</td><td>B.U.</td><td>Input</td><td>Back up voltage sense terminal.<br>"H" Level: Back up on</td></tr>
</table>

## •LCD (CWW1216)

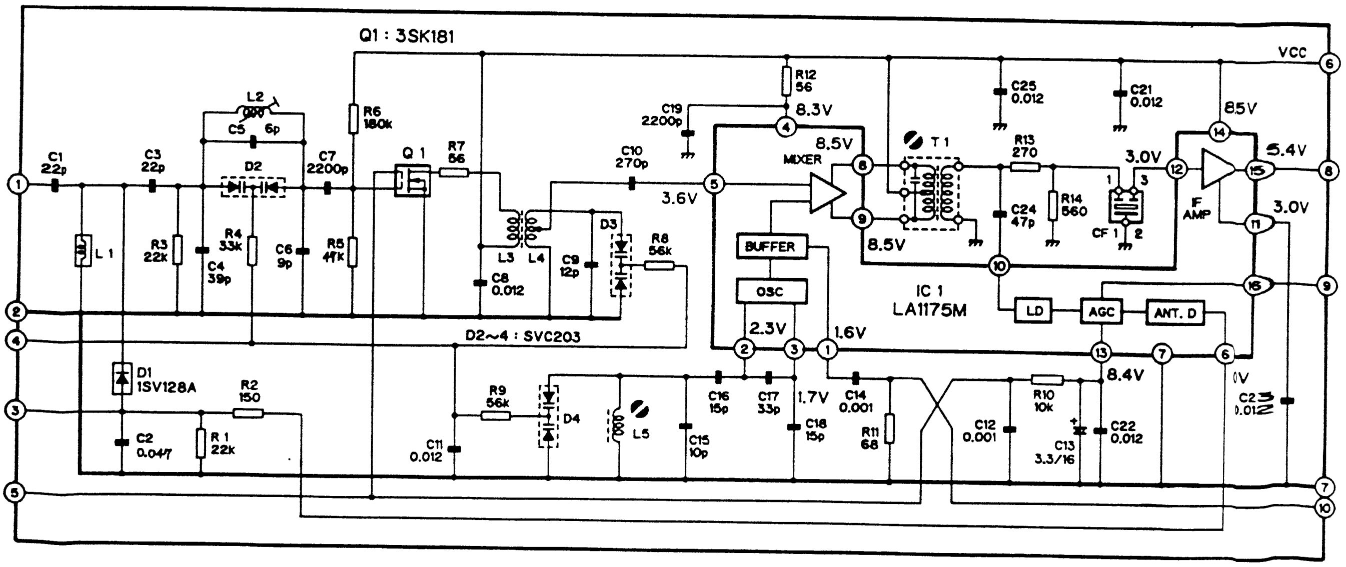
COMMON


LOC
SEEK
MONO
SDK
SK
CH
COM1
COM0

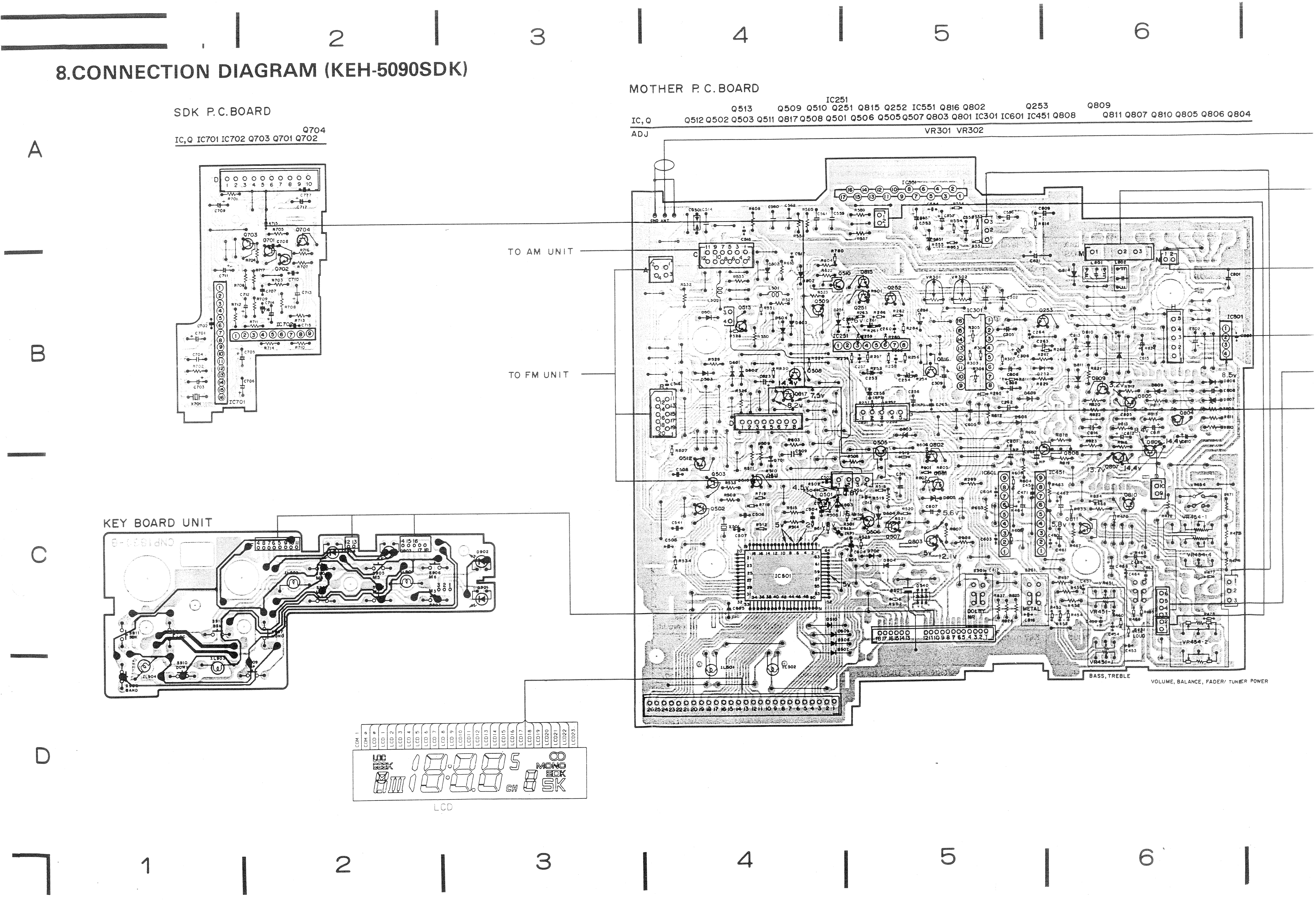
SEGMENT


LOC
SEEK
MONO
SDK
SK
CH
LCD 0
LCD 1
LCD 2
LCD 3
LCD 4
LCD 5
LCD 6
LCD 7
LCD 8
LCD 9
LCD 10
LCD 11
LCD 12
LCD 13
LCD 14
LCD 15
LCD 16
LCD 17
LCD 18
LCD 19
LCD 20
LCD 21
LCD 22
LCD 23

## •Front End Unit(CWB1032)


Q1 : 3SK181
VCC
L2
C5 6p
C1 22p
C3 22p
D2
C7 2200p
Q 1
R7 56
R6 180k
L 1
R3 22k
R4 33k
C4 39p
C6 9p
R5 47k
C8 0.012
L3
L4
C9 12p
D3
R8 56k
C10 270p
3.6V
C19 2200p
R12 56
8.3V
8.5V
MIXER
BUFFER
OSC
2.3V
1.6V
IC 1
LA1175M
T 1
R13 270
C25 0.012
C21 0.012
3.0V
C24 47p
R14 560
CF 1
85V
5.4V
IF AMP
3.0V
8.5V
LD
AGC
ANT. D
D2～4 : SVC203
D1 1SV128A
R2 150
C2 0.047
R 1 22k
R9 56k
D4
L5
C11 0.012
C16 15p
C17 33p
C15 10p
C18 15p
1.7V
C14 0.001
R11 68
C12 0.001
R10 10k
C13 3.3/16
C22 0.012
8.4V
0V
C23 0.012
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

# 8.CONNECTION DIAGRAM (KEH-5090SDK)


1
2
3
4
5
6
A
B
C
D
SDK P.C.BOARD
IC,Q IC701 IC702 Q703 Q701 Q702 Q704
MOTHER P.C.BOARD
IC251
Q513 Q509 Q510 Q251 Q815 Q252 IC551 Q816 Q802 Q253 Q809
IC,Q Q512 Q502 Q503 Q511 Q817 Q508 Q501 Q506 Q505 Q507 Q803 Q801 IC301 IC601 IC451 Q808 Q811 Q807 Q810 Q805 Q806 Q804
ADJ VR301 VR302
TO AM UNIT
TO FM UNIT
KEY BOARD UNIT
IC701
IC702
IC501
IC301
DOLBY NR
METAL
LOUD
BASS, TREBLE
VOLUME, BALANCE, FADER/ TUNER POWER
LOC
SEEK
MONO
SDK
LCD

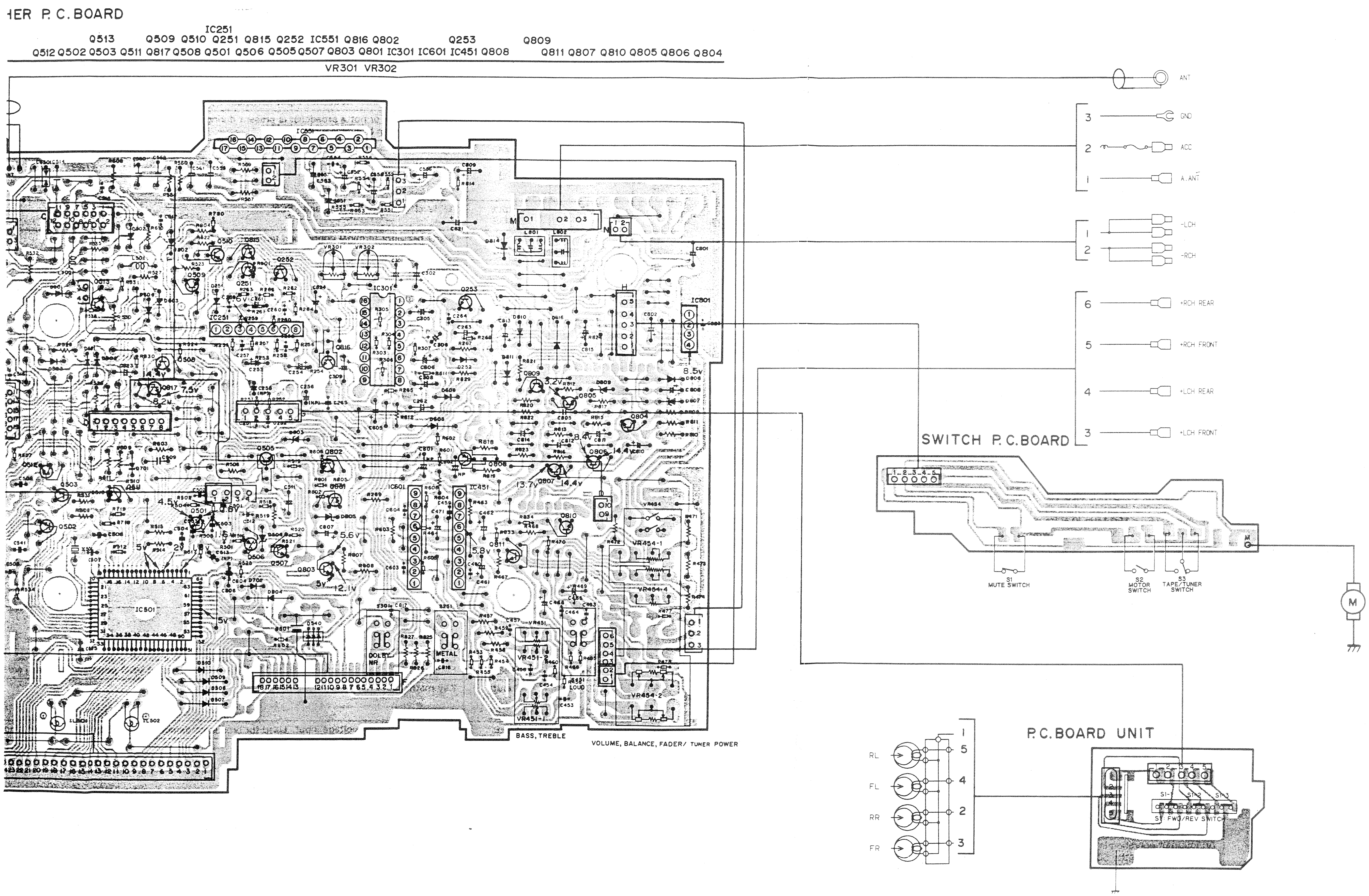

4
5
6
7
8
9
A
B
C
D
HER P.C.BOARD
IC251
Q513 Q509 Q510 Q251 Q815 Q252 IC551 Q816 Q802 Q253 Q809
Q512 Q502 Q503 Q511 Q817 Q508 Q501 Q506 Q505 Q507 Q803 Q801 IC301 IC601 IC451 Q808 Q811 Q807 Q810 Q805 Q806 Q804
VR301 VR302
ANT
GND
ACC
A.ANT
-LCH
-RCH
+RCH REAR
+RCH FRONT
+LCH REAR
+LCH FRONT
SWITCH P.C.BOARD
S1 MUTE SWITCH
S2 MOTOR SWITCH
S3 TAPE/TUNER SWITCH
M
P.C.BOARD UNIT
RL
FL
RR
FR
S1 FWD/REV SWITCH
IC551
IC301
IC801
IC251
IC501
IC601
IC451
DOLBY NR
METAL
BASS, TREBLE
VOLUME, BALANCE, FADER/ TUNER POWER
4
5
6
7
8
9

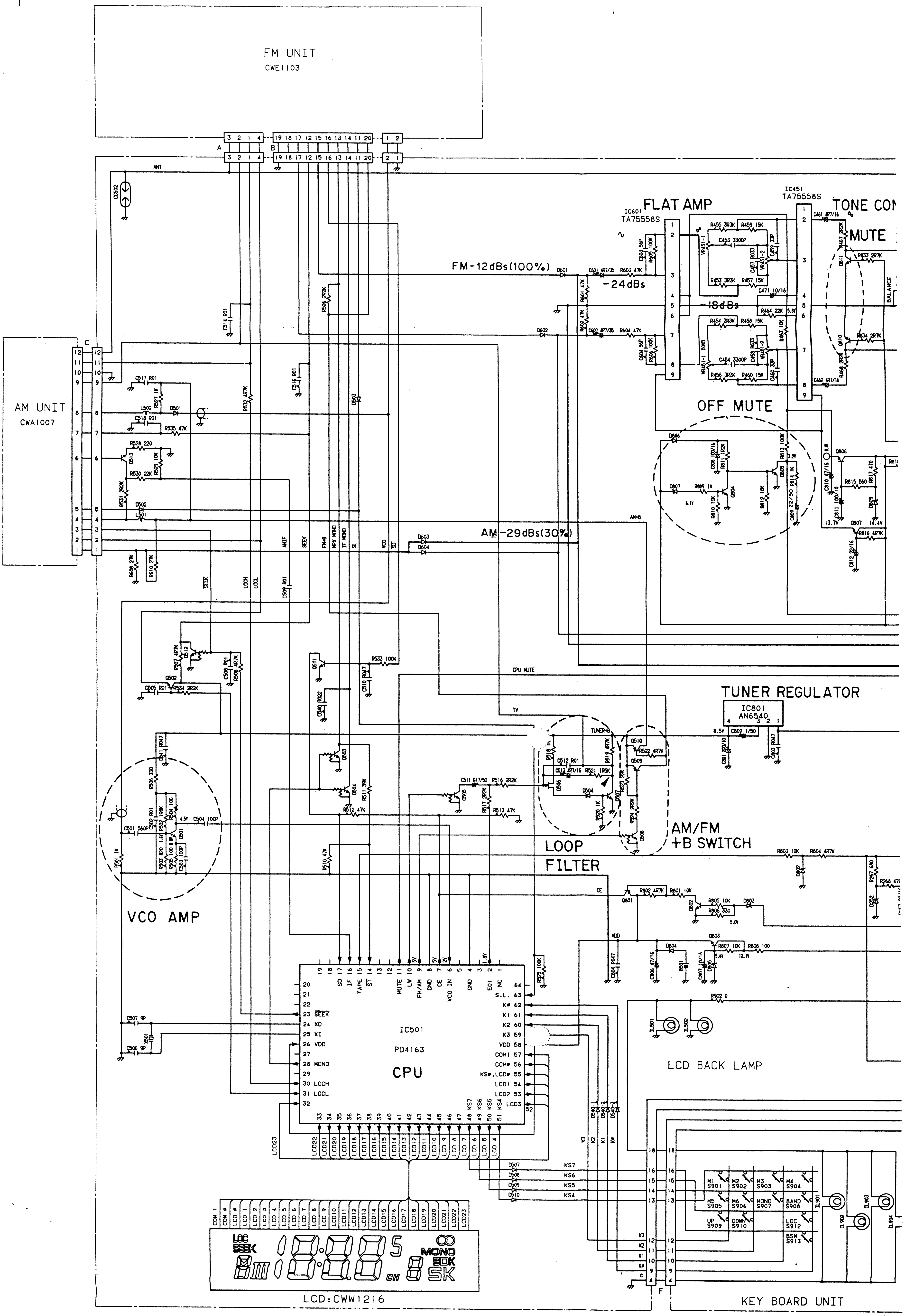
Fig. 14

# 10.SCHEMATIC CIRCUIT DIAGRAM

NOTE:

: Chip capacitor.
: Chip resistor.
: Chip diode.
: Chip transistor.

Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022



FM UNIT
CWE1103
AM UNIT
CWA1007
ANT
FM-12dBs(100%)
-24dBs
18dBs
AM-29dBs(30%)
FLAT AMP
IC601
TA75558S
IC451
TA75558S
TONE CON
MUTE
BALANCE
OFF MUTE
TUNER REGULATOR
IC801
AN6540
CPU MUTE
TV
TUNER+B
LOOP
FILTER
AM/FM
+B SWITCH
VCO AMP
IC501
PD4163
CPU
SEEK
MONO
LOCH
LOCL
LCD BACK LAMP
IL501
IL502
LCD:CWW1216
KEY BOARD UNIT
M1 S901
M2 S902
M3 S903
M4 S904
M5 S905
M6 S906
MONO S907
BAND S908
UP S909
DOWN S910
LOC S912
BSM S913
KS7
KS6
KS5
KS4

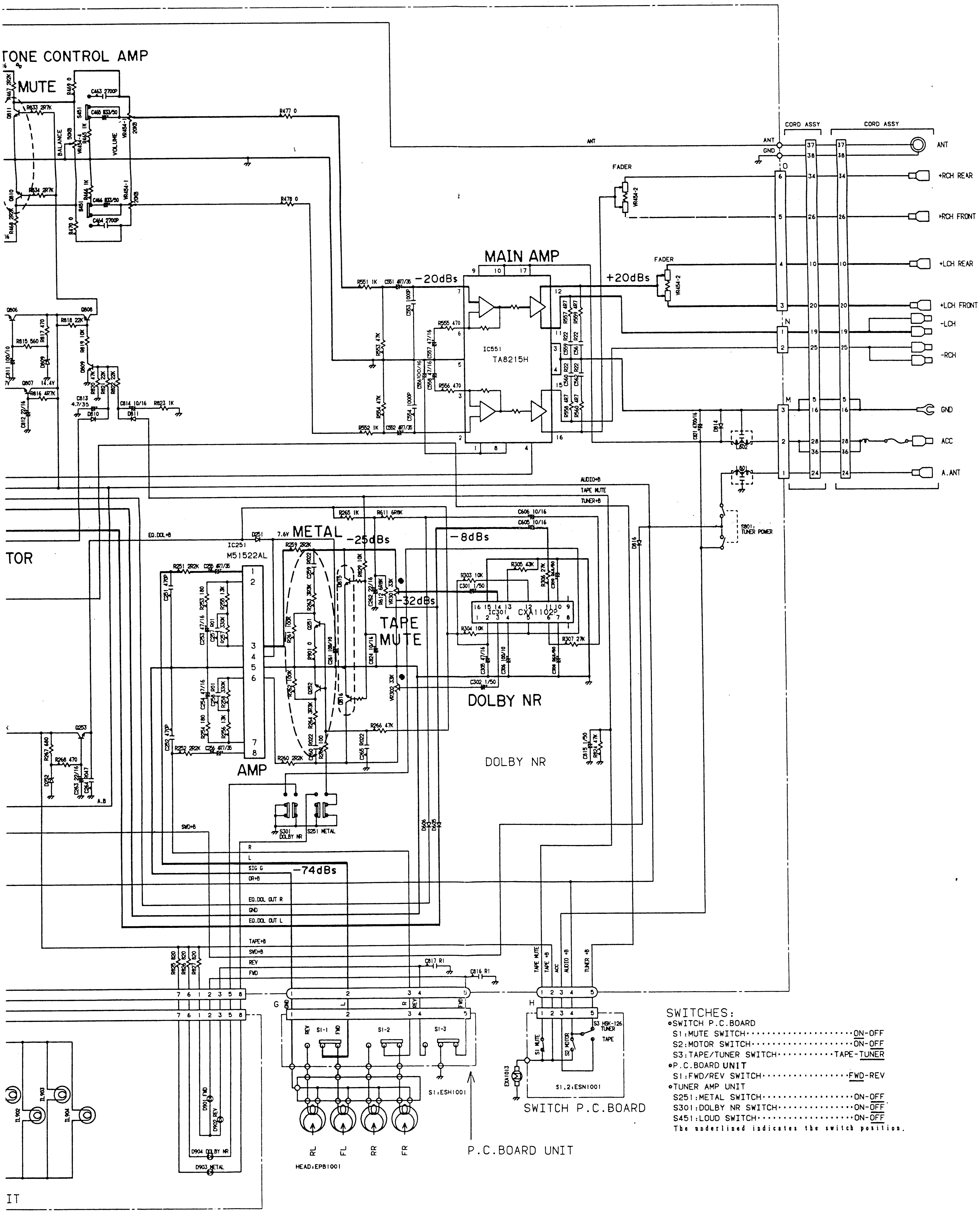
TUNER AMP UNIT

| | |
|---|---|
| Q251,252,507,802-805,<br>809 | 2SC2458<br>(2SC1740S) |
| Q253,806,807 | 2SD1919 |
| Q501 | 2SC2498 |
| Q502 | 2SC4038 |
| Q503,505,508,512 | DTC144ES |
| Q504 | DTC144EL |
| Q506 | 2SK330 |
| Q509,510 | 2SA1150 |
| Q511,513 | 2SC3113 |
| Q801;808 | 2SA1048 |
| Q810,811 | 2SD1468S |
| Q815,816 | DTC314TS |
| D251,502,503,601-604,<br>606,806,810,811 | 1SS133 |
| D252 | HZS9R1EB2<br>(RD9R1ESB2) |
| D501 | 1SS135 |

| | |
|---|---|
| D504 | HZS3R0EB2<br>(RD3R0ESB2) |
| D507-510,605,816 | 1S1555 |
| D540 | MA78-TR |
| D802 | HZS5R1EB2<br>(RD5R1ESB2) |
| D803 | HZS7R5EB2<br>(RD7R5ESB2) |
| D804 | MA700 |
| D805 | HZS5R6JB2<br>(RD5R6JSB2) |
| D807 | HZS8R2JB2<br>(RD8R2JSB2) |
| D809 | HZS9R1EB2<br>(RD9R1ESB2) |
| D814 | SM-3-02 |
| S251,301,451 | CSG-207 |
| IL501,502 | CEL1025 |
| VR301,302 | VRTB6VS333 |
| VR451 | CSS1114 |
| VR454/S801 | CCS1113 |

KEY BOARD UNIT

| | |
|---|---|
| D901,902 | SLR-320DU3LM |
| D903 904 | SLR-320PG3KL |
| S901-910,912,913 | CSG-253<br>(CSG1021) |
| IL901-904 | CEL1025 |


TUNER AMP UNIT
TONE CONTROL AMP
MUTE
BALANCE
VOLUME
MAIN AMP
IC551
TA8215H
-20dBs
+20dBs
FADER
CORD ASSY
ANT
+RCH REAR
+RCH FRONT
+LCH REAR
+LCH FRONT
-LCH
-RCH
GND
ACC
A.ANT
AUDIO+B
TAPE MUTE
TUNER+B
S801: TUNER POWER
TOR
IC251
M51522AL
7.6V
METAL
-25dBs
-8dBs
-32dBs
IC301
CXA1102S
TAPE MUTE
DOLBY NR
AMP
-74dBs
S301 DOLBY NR
S251 METAL
R
L
SIG G
DR+B
EQ.DOL OUT R
GND
EQ.DOL OUT L
TAPE+B
SWD+B
REV
FWD
G
H
S1-1
S1-2
S1-3
S1:ESH1001
S3 HSK-126
TUNER
TAPE
S1 MUTE
S2 MOTOR
S1,2:ESN1001
EXA1013
SWITCH P.C.BOARD
HEAD:EPB1001
RL
FL
RR
FR
P.C.BOARD UNIT
D901 FWD
D902 REV
D904 DOLBY NR
D903 METAL
IL902
IL903
IL904
IT

SWITCHES:
- SWITCH P.C.BOARD
  - S1:MUTE SWITCH························ON-OFF
  - S2:MOTOR SWITCH······················ON-OFF
  - S3:TAPE/TUNER SWITCH···········TAPE-TUNER
- P.C.BOARD UNIT
  - S1:FWD/REV SWITCH····················FWD-REV
- TUNER AMP UNIT
  - S251:METAL SWITCH····················ON-OFF
  - S301:DOLBY NR SWITCH················ON-OFF
  - S451:LOUD SWITCH·····················ON-OFF

The underlined indicates the switch position.

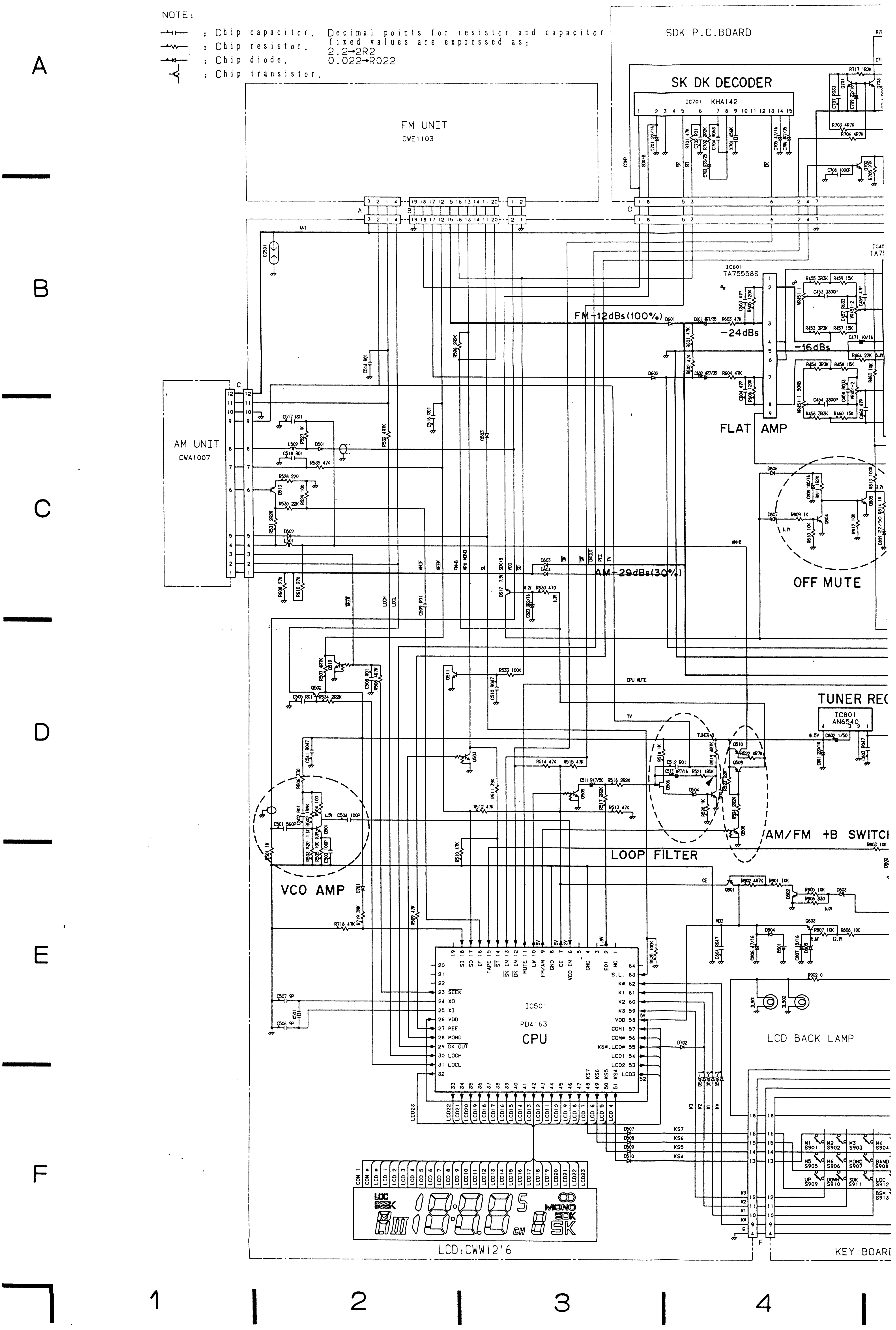
Fig. 1

# 9.SCHEMATIC CIRCUIT DIAGRAM (KEH-5090SDK)

NOTE:

- : Chip capacitor.
- : Chip resistor.
- : Chip diode.
- : Chip transistor.

Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022



A
B
C
D
E
F
1
2
3
4
SDK P.C.BOARD
SK DK DECODER
IC701 KHA142
FM UNIT
CWE1103
AM UNIT
CWA1007
IC601
TA75558S
FM-12dBs(100%)
-24dBs
-16dBs
FLAT AMP
OFF MUTE
AM-29dBs(30%)
CPU MUTE
TUNER REG
IC801
AN6540
AM/FM +B SWITCH
LOOP FILTER
VCO AMP
IC501
PD4163
CPU
LCD BACK LAMP
LCD:CWW1216
KEY BOARD
ANT
COMP
SDK+B
SK
DK
AM+B
TV
TUNER+B
VDD
CE
SEEK
LOCH
LOCL
AMIF
FM+B
MPX MONO
SL
VCO
ST
DK OUT
PEE
M1 S901
M2 S902
M3 S903
M4 S904
M5 S905
M6 S906
MONO S907
BAND S908
UP S909
DOWN S910
SDK S911
LOC S912
BSM S913
KS4
KS5
KS6
KS7
K1
K2
K3
K#
LOC
SEEK
MONO
SDK
SK

TUNER AMP UNIT

| | |
|---|---|
| Q251,252,507,802-805,809,701-704 | 2SC2458 (2SC1740S) |
| Q253,806,807 | 2SD1919 |
| Q501 | 2SC2498 |
| Q502 | 2SC4038 |
| Q503,505,508,512 | DTC144ES |
| Q506 | 2SK330 |
| Q509,510 | 2SA1150 |
| Q511,513 | 2SC3113 |
| Q801,808 | 2SA1048 |
| Q810,811 | 2SD1468S |
| Q815,816 | DTC314TS |
| Q817 | 2SD1864 |
| D251,502,503,601-604,606,701,702,806,810,811 | 1SS133 |
| D252 | HZS9R1EB2 (RD9R1ESB2) |
| D501 | 1SS135 |

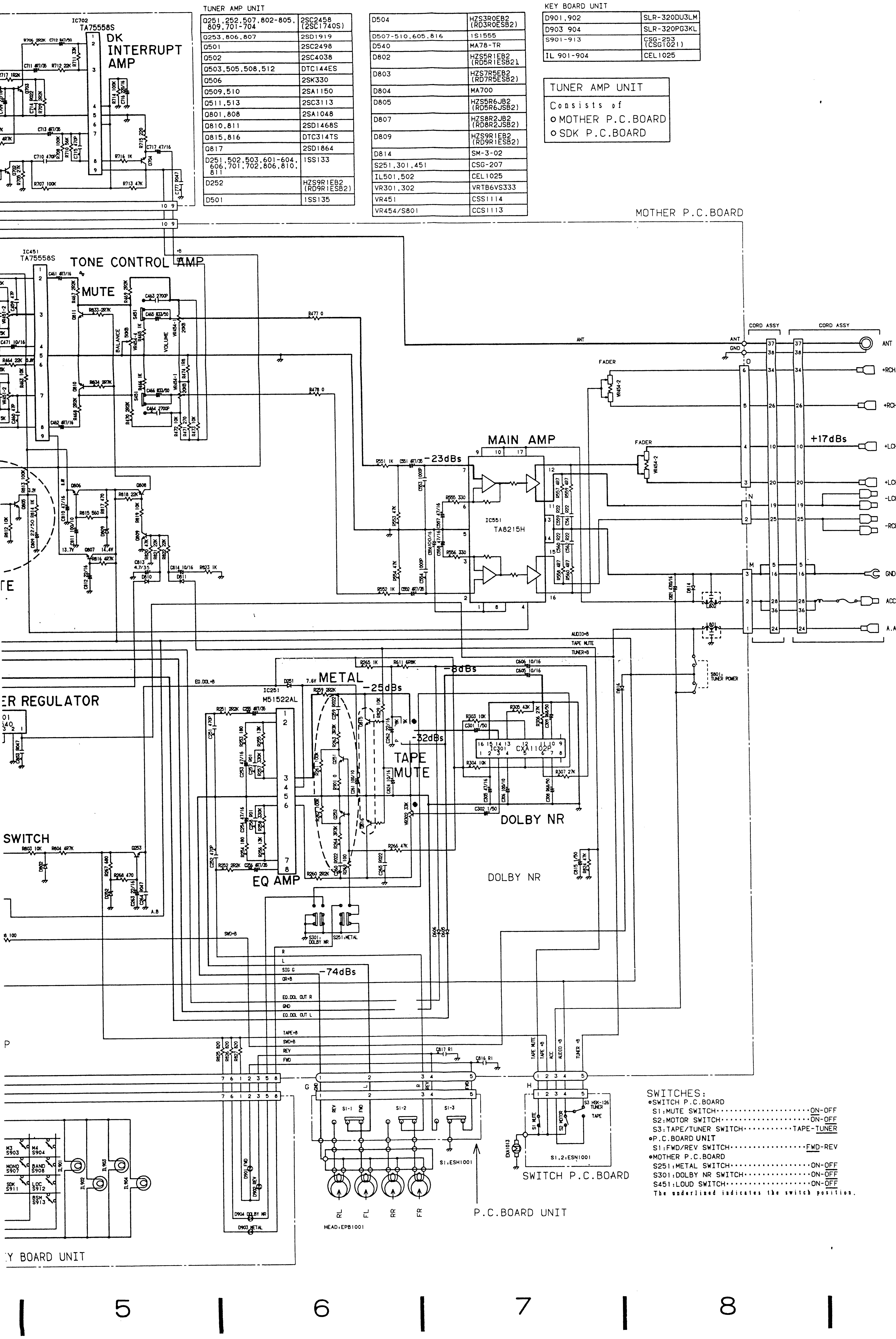
| | |
|---|---|
| D504 | HZS3R0EB2 (RD3R0ESB2) |
| D507-510,605,816 | 1S1555 |
| D540 | MA78-TR |
| D802 | HZS5R1EB2 (RD5R1ESB2) |
| D803 | HZS7R5EB2 (RD7R5ESB2) |
| D804 | MA700 |
| D805 | HZS5R6JB2 (RD5R6JSB2) |
| D807 | HZS8R2JB2 (RD8R2JSB2) |
| D809 | HZS9R1EB2 (RD9R1ESB2) |
| D814 | SM-3-02 |
| S251,301,451 | CSG-207 |
| IL501,502 | CEL1025 |
| VR301,302 | VRTB6VS333 |
| VR451 | CSS1114 |
| VR454/S801 | CCS1113 |

KEY BOARD UNIT

| | |
|---|---|
| D901,902 | SLR-320DU3LM |
| D903 904 | SLR-320PG3KL |
| S901-913 | CSG-253 (CSG1021) |
| IL 901-904 | CEL1025 |

TUNER AMP UNIT

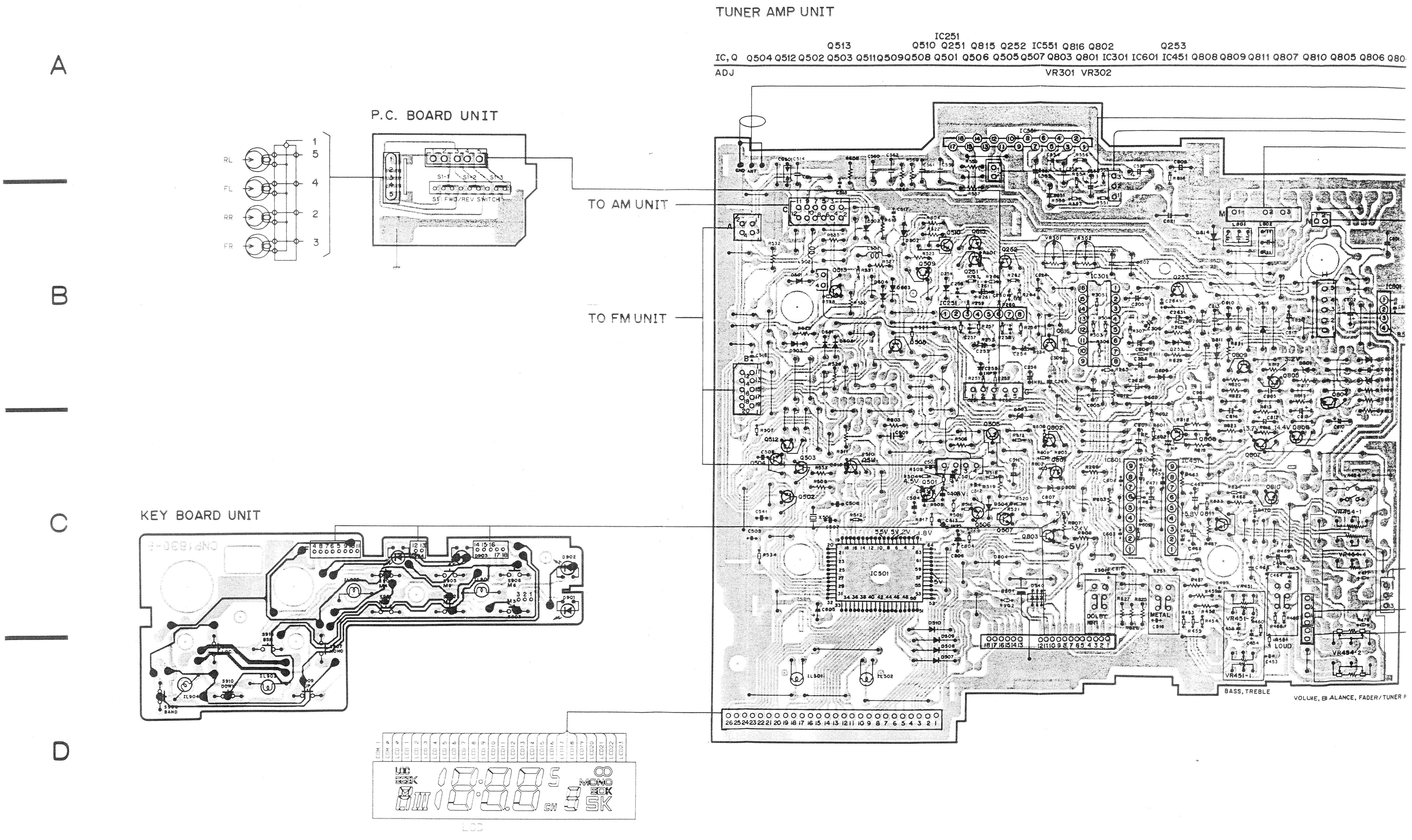
Consists of
- ○ MOTHER P.C.BOARD
- ○ SDK P.C.BOARD


IC702
TA75558S
DK INTERRUPT AMP
IC451
TA75558S
TONE CONTROL AMP
MUTE
BALANCE
VOLUME
MOTHER P.C.BOARD
CORD ASSY
CORD ASSY
ANT
GND
FADER
+RCH REAR
+RCH FRONT
+LCH REAR
+LCH FRONT
-LCH
-RCH
GND
ACC
A.ANT
+17dBs
MAIN AMP
-23dBs
IC551
TA8215H
AUDIO+B
TAPE MUTE
TUNER+B
S801: TUNER POWER
ER REGULATOR
IC251
M51522AL
METAL
-8dBs
-25dBs
-32dBs
TAPE MUTE
IC301
CXA1102P
DOLBY NR
DOLBY NR
EQ AMP
SWITCH
S301: DOLBY NR
S251: METAL
-74dBs
R
L
SIG G
DR+B
EQ.DOL OUT R
GND
EQ.DOL OUT L
TAPE+B
SWD+B
REV
FWD
G
H
S1-1
S1-2
S1-3
S1: ESH1001
RL
FL
RR
FR
HEAD: EPB1001
P.C.BOARD UNIT
S1 MUTE
S2 MOTOR
S3 HSK-126
TUNER
TAPE
S1,2: ESN1001
EXA1013
SWITCH P.C.BOARD
D904 DOLBY NR
D903 METAL
M3 S903
M4 S904
MONO S907
BAND S908
SDK S911
LOC S912
BSM S913
IL901
IL902
IL903
IL904
Y BOARD UNIT
5
6
7
8
9
F

SWITCHES:
- SWITCH P.C.BOARD
  - S1:MUTE SWITCH······················ON-OFF
  - S2:MOTOR SWITCH······················ON-OFF
  - S3:TAPE/TUNER SWITCH···········TAPE-TUNER
- P.C.BOARD UNIT
  - S1:FWD/REV SWITCH··················FWD-REV
- MOTHER P.C.BOARD
  - S251:METAL SWITCH····················ON-OFF
  - S301:DOLBY NR SWITCH···············ON-OFF
  - S451:LOUD SWITCH······················ON-OFF

The underlined indicates the switch position.

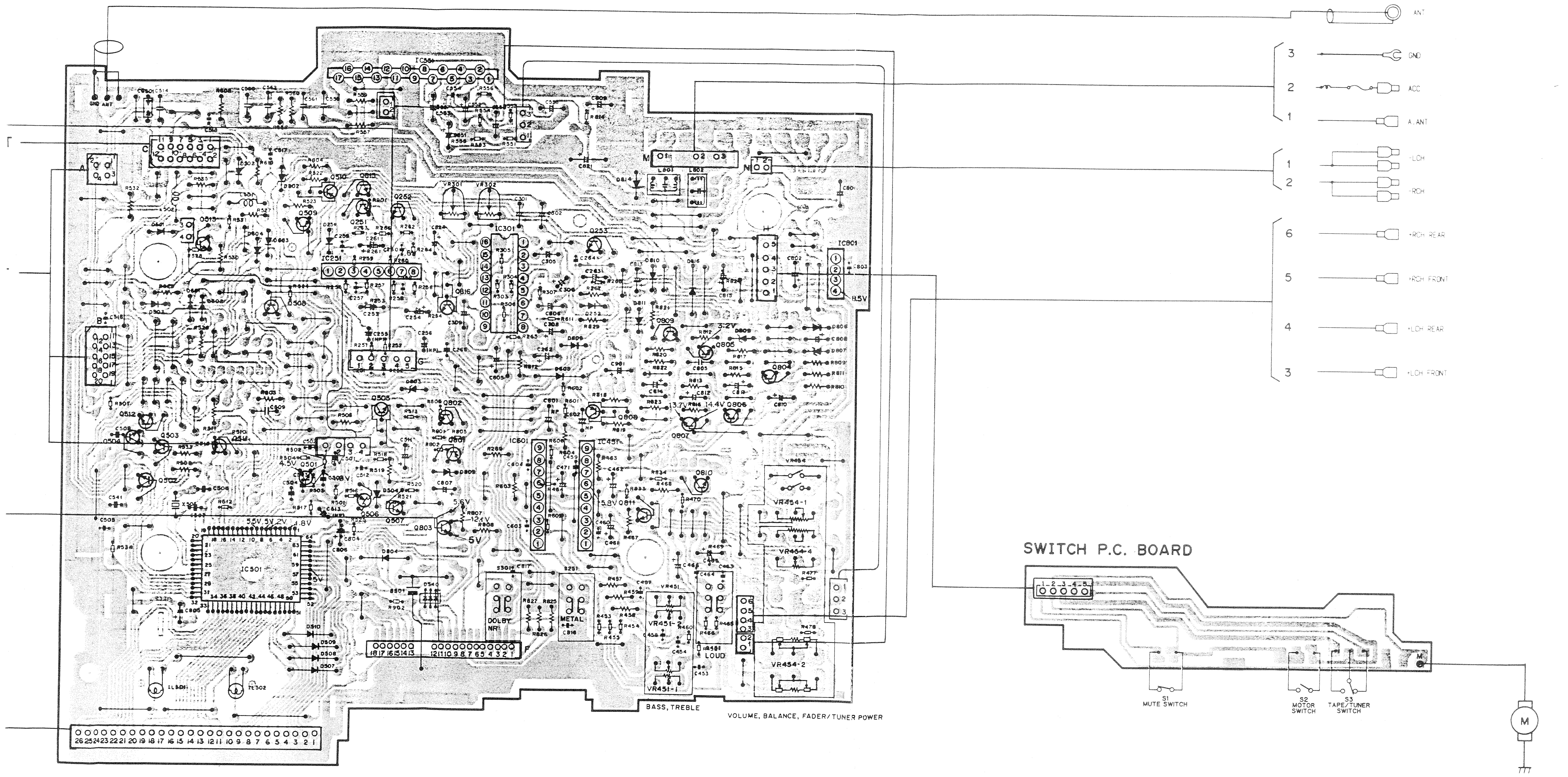
# 11.CONNECTION DIAGRAM (KEH-5090B)


1
2
3
4
5
6
A
B
C
D
TUNER AMP UNIT
IC,Q
Q504 Q512 Q502 Q503 Q511 Q509 Q508 Q501 Q506 Q505 Q507 Q803 Q801 IC301 IC601 IC451 Q808 Q809 Q811 Q807 Q810 Q805 Q806
Q513
Q510 Q251 Q815 Q252 IC551 Q816 Q802
IC251
Q253
ADJ
VR301 VR302
P.C. BOARD UNIT
RL
FL
RR
FR
S1-1
S1-2
S1-3
S1: FWD/REV SWITCH
TO AM UNIT
TO FM UNIT
KEY BOARD UNIT
IC501
IC551
IC251
IC301
IC601
IC451
DOLBY
METAL
LOUD
BASS, TREBLE
VOLUME, BALANCE, FADER/TUNER
VR451-1
VR451-2
VR454-1
VR454-2
26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1
LOC
SEEK
MONO
CH
SK
LCD

1 | 2 | 3 | 4 | 5 | 6

## TUNER AMP UNIT

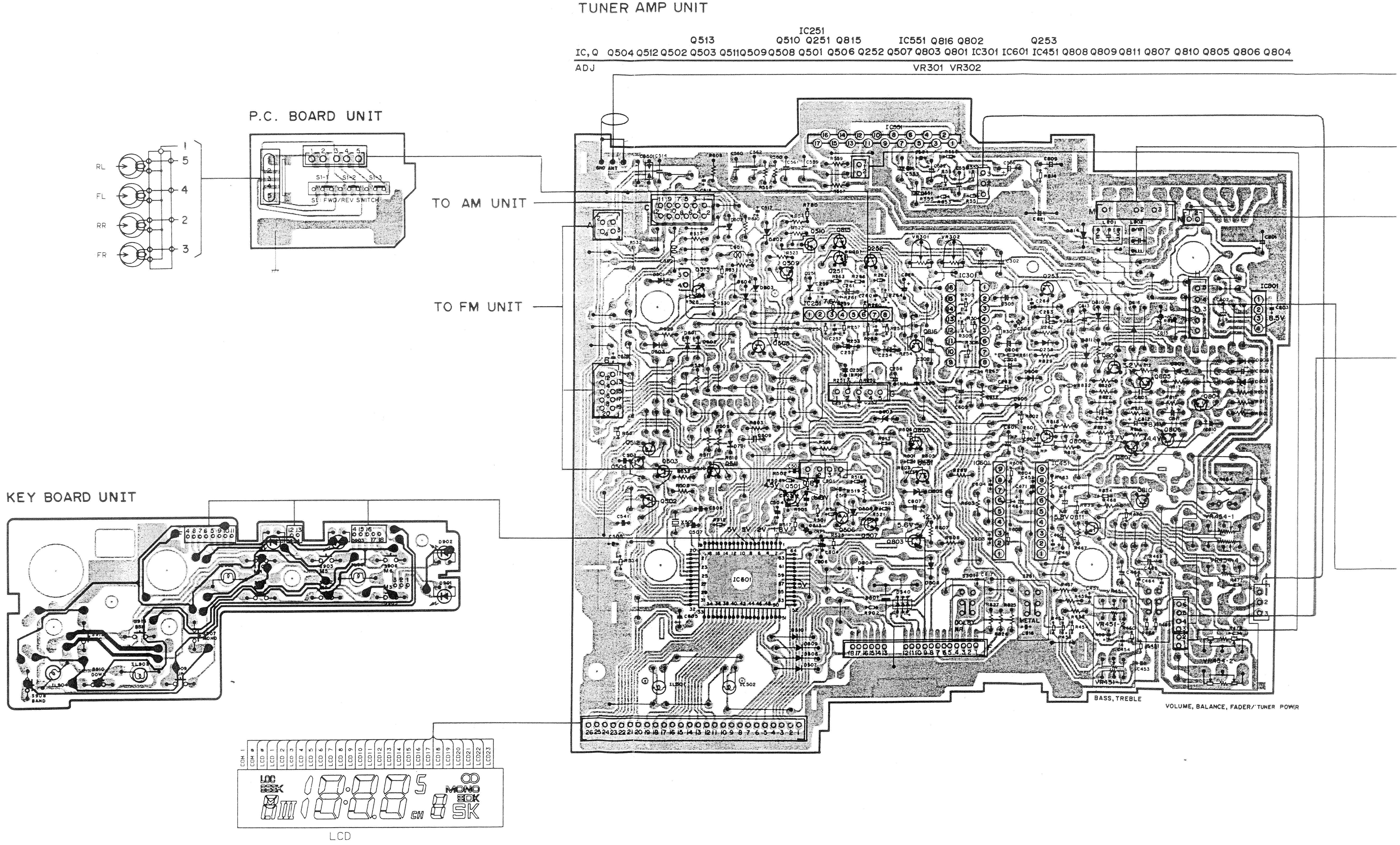
IC251
Q513 Q510 Q251 Q815 Q252 IC551 Q816 Q802 Q253
IC, Q Q504 Q512 Q502 Q503 Q511 Q509 Q508 Q501 Q506 Q505 Q507 Q803 Q801 IC301 IC601 IC451 Q808 Q809 Q811 Q807 Q810 Q805 Q806 Q804
ADJ VR301 VR302



4 5 6 7 8 9
A B C D
ANT
3 GND
2 ACC
1 A.ANT
1 -LCH
2 -RCH
6 +RCH REAR
5 +RCH FRONT
4 +LCH REAR
3 +LCH FRONT
IC551
IC301
IC251
IC801
IC601
IC451
IC501
DOLBY NR
METAL
LOUD
BASS, TREBLE
VOLUME, BALANCE, FADER/TUNER POWER
SWITCH P.C. BOARD
S1 MUTE SWITCH
S2 MOTOR SWITCH
S3 TAPE/TUNER SWITCH
M

Fig. 17

# 12.CONNECTION DIAGRAM (KEH-5070QR)


TUNER AMP UNIT
IC,Q
Q504 Q512 Q502 Q503 Q511 Q509 Q508 Q501 Q506 Q252 Q507 Q803 Q801 IC301 IC601 IC451 Q808 Q809 Q811 Q807 Q810 Q805 Q806 Q804
Q513
IC251
Q510 Q251 Q815
IC551 Q816 Q802
Q253
ADJ
VR301 VR302
P.C. BOARD UNIT
S1 FWD/REV SWITCH
RL
FL
RR
FR
TO AM UNIT
TO FM UNIT
KEY BOARD UNIT
IC601
IC301
IC801
BASS, TREBLE
VOLUME, BALANCE, FADER/TUNER POWER
LCD
LOC
SEEK
MONO
SDK
SK
CH

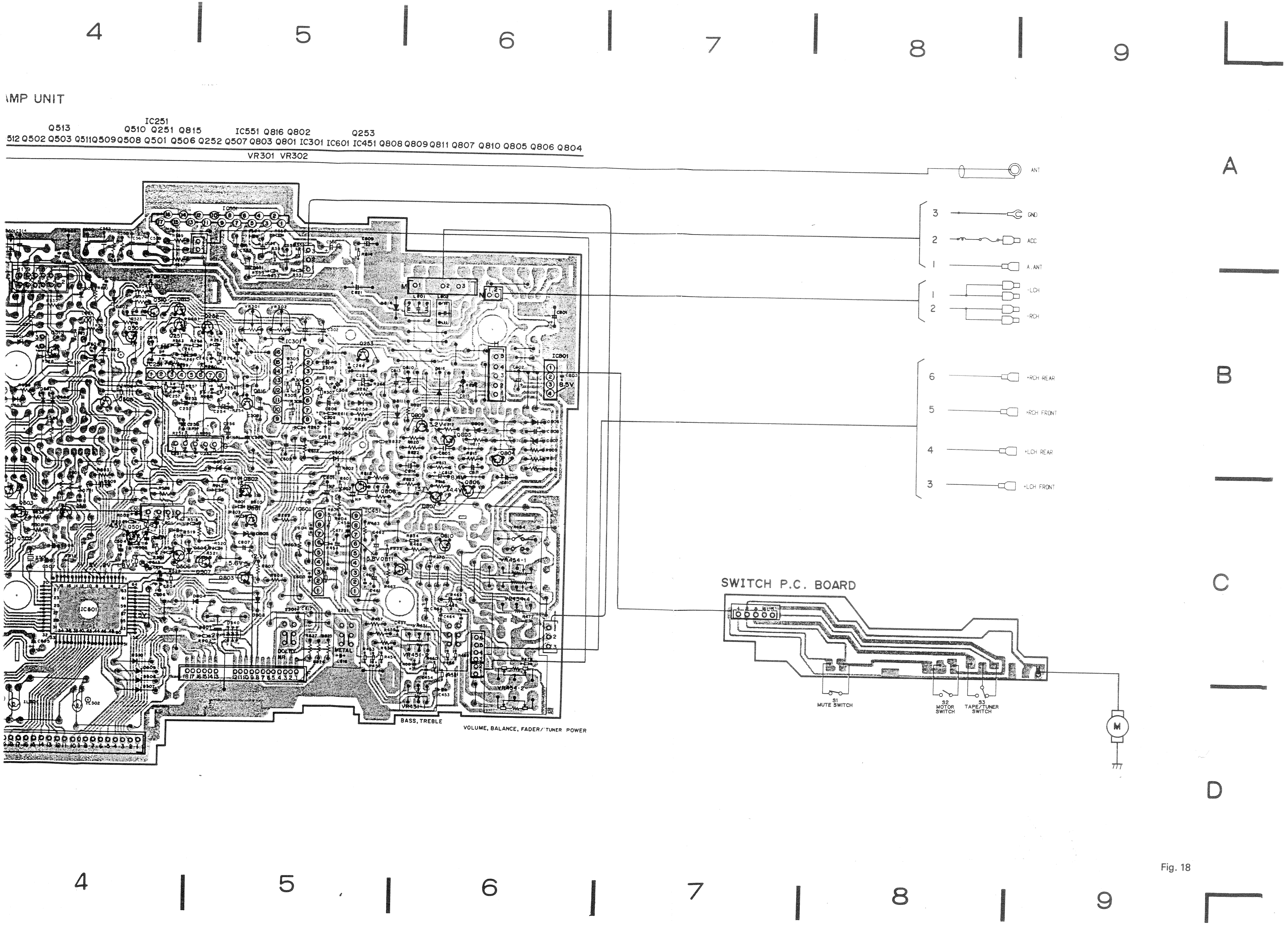

4
5
6
7
8
9
A
B
C
D
MP UNIT
IC251
Q513
Q510 Q251 Q815
IC551 Q816 Q802
Q253
512 Q502 Q503 Q511Q509Q508 Q501 Q506 Q252 Q507 Q803 Q801 IC301 IC601 IC451 Q808 Q809 Q811 Q807 Q810 Q805 Q806 Q804
VR301 VR302
IC551
IC301
IC801
IC601
IC451
IC601
VR451-1
VR451-2
VR454-1
VR454-2
DOLBY NR
METAL
BASS, TREBLE
VOLUME, BALANCE, FADER/TUNER POWER
ANT
3
GND
2
ACC
1
A.ANT
1
-LCH
2
-RCH
6
+RCH REAR
5
+RCH FRONT
4
+LCH REAR
3
+LCH FRONT
SWITCH P.C. BOARD
S1
MUTE SWITCH
S2
MOTOR SWITCH
S3
TAPE/TUNER SWITCH
M

Fig. 18

# 14.SCHEMATIC CIRCUIT DIAGRAM

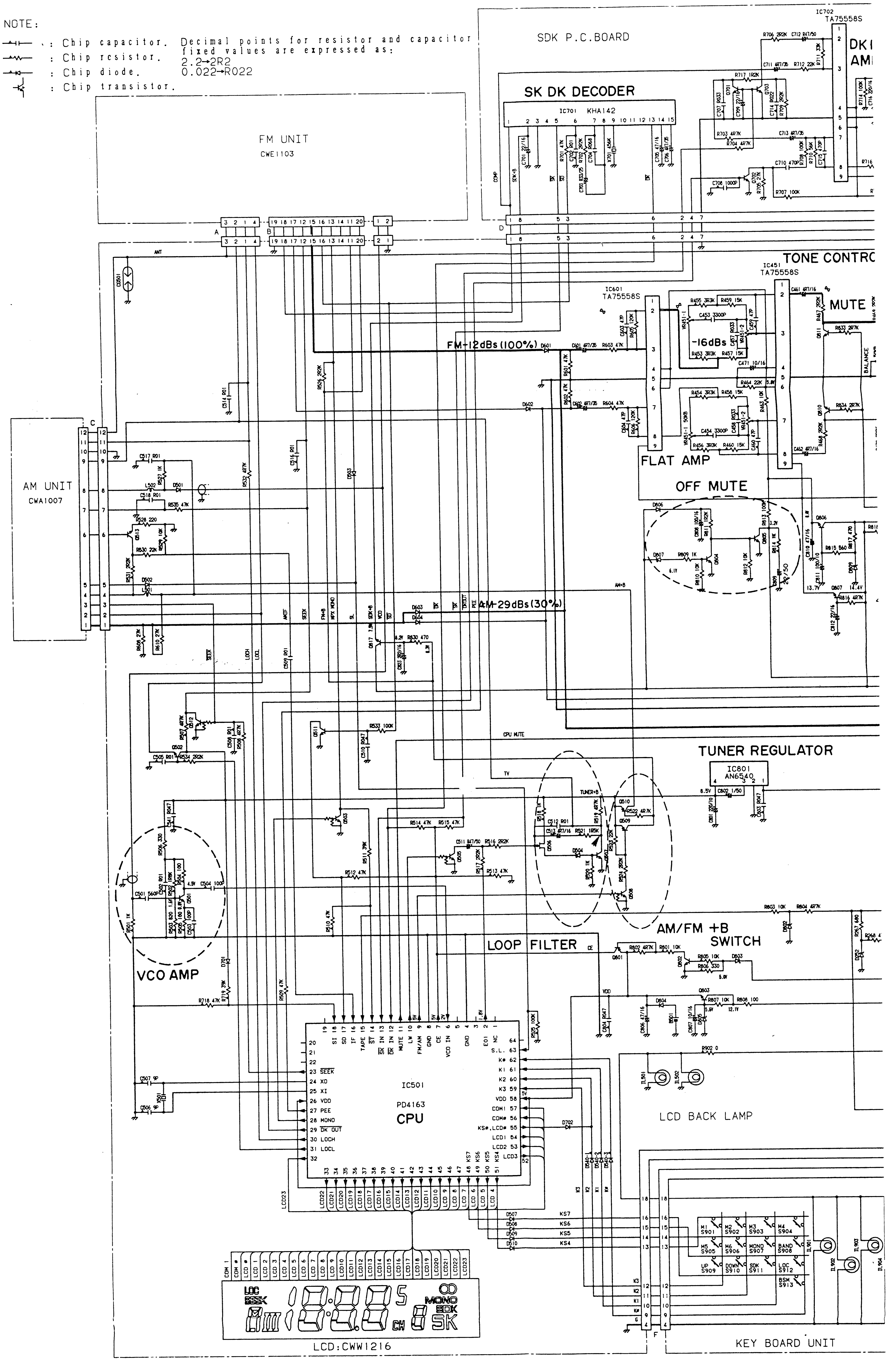
NOTE:

—||— : Chip capacitor. Decimal points for resistor and capacitor fixed values are expressed as:

—/\/\/— : Chip resistor. 2.2→2R2

—▷|— : Chip diode. 0.022→R022

: Chip transistor.


1
2
3
4
5
A
B
C
D
E
F
SDK P.C.BOARD
IC702
TA75558S
DK
AM
SK DK DECODER
IC701 KHA142
FM UNIT
CWE1103
IC601
TA75558S
IC451
TA75558S
TONE CONTRO
MUTE
FM-12dBs(100%)
-16dBs
BALANCE
FLAT AMP
OFF MUTE
AM UNIT
CWA1007
AM-29dBs(30%)
TUNER REGULATOR
IC801
AN6540
TUNER+B
CPU MUTE
VCO AMP
LOOP FILTER
AM/FM +B
SWITCH
IC501
PD4163
CPU
LCD BACK LAMP
M1 S901
M2 S902
M3 S903
M4 S904
M5 S905
M6 S906
MONO S907
BAND S908
UP S909
DOWN S910
SDK S911
LOC S912
BSM S913
LCD:CWW1216
KEY BOARD UNIT

TUNER AMP UNIT

| | |
|---|---|
| Q253,806,807 | 2SD1919 |
| Q501 | 2SC2498 |
| Q502 | 2SC4038 |
| Q503,505,508,512 | DTC144ES |
| Q506 | 2SK330 |
| Q507,802-805,809,701-704 | 2SC2458<br>(2SC1740S) |
| Q509,510 | 2SA1150 |
| Q511,513 | 2SC3113 |
| Q801,808 | 2SA1048 |
| Q810,811 | 2SD1468S |
| Q815,816 | DTC314TS |
| Q817 | 2SD1864 |
| D251,502,503,601-604,606,701,702,806,810,811 | 1SS133 |
| D252 | HZS9R1EB2<br>(RD9R1ESB2) |
| D501 | 1SS135 |

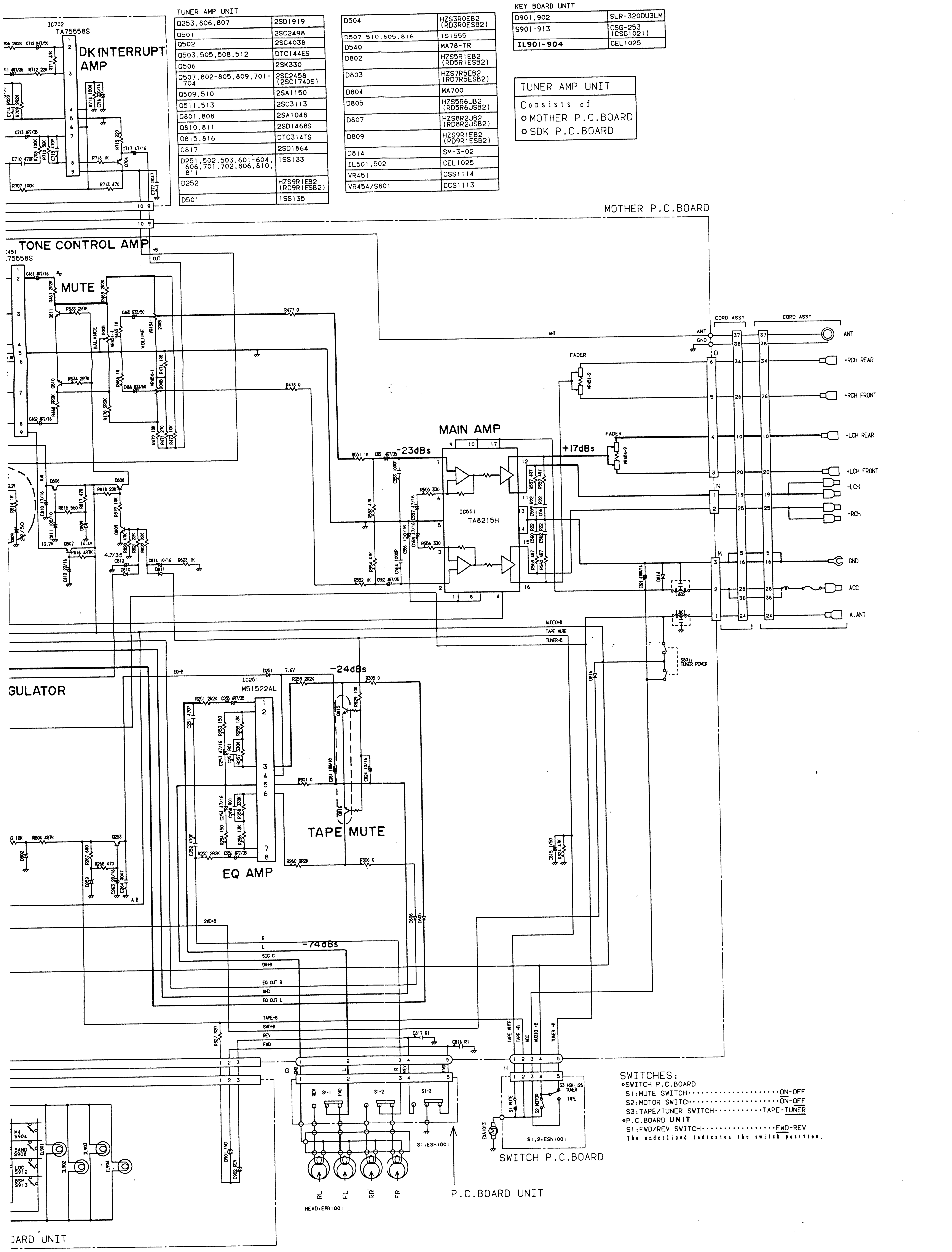
| | |
|---|---|
| D504 | HZS3R0EB2<br>(RD3R0ESB2) |
| D507-510,605,816 | 1S1555 |
| D540 | MA78-TR |
| D802 | HZS5R1EB2<br>(RD5R1ESB2) |
| D803 | HZS7R5EB2<br>(RD7R5ESB2) |
| D804 | MA700 |
| D805 | HZS5R6JB2<br>(RD5R6JSB2) |
| D807 | HZS8R2JB2<br>(RD8R2JSB2) |
| D809 | HZS9R1EB2<br>(RD9R1ESB2) |
| D814 | SM-3-02 |
| IL501,502 | CEL1025 |
| VR451 | CSS1114 |
| VR454/S801 | CCS1113 |

KEY BOARD UNIT

| | |
|---|---|
| D901,902 | SLR-320DU3LM |
| S901-913 | CSG-253<br>(CSG1021) |
| **IL901-904** | CEL1025 |

TUNER AMP UNIT

Consists of
o MOTHER P.C.BOARD
o SDK P.C.BOARD



IC702
TA75558S
DK INTERRUPT AMP
TONE CONTROL AMP
MUTE
BALANCE
VOLUME
MOTHER P.C.BOARD
CORD ASSY
CORD ASSY
ANT
GND
FADER
VR454-2
MAIN AMP
-23dBs
+17dBs
IC551
TA8215H
+RCH REAR
+RCH FRONT
+LCH REAR
+LCH FRONT
-LCH
-RCH
GND
ACC
A.ANT
AUDIO+B
TAPE MUTE
TUNER+B
S801: TUNER POWER
GULATOR
IC251
M51522AL
-24dBs
TAPE MUTE
EQ AMP
-74dBs
R
L
SIG G
DR+B
EQ OUT R
GND
EQ OUT L
TAPE+B
SWD+B
REV
FWD
TAPE MUTE
TAPE +B
ACC
AUDIO +B
TUNER +B
S3 MSK-126
TUNER
TAPE
S1 MUTE
S2 MOTOR
EXA1013
S1,2:ESN1001
SWITCH P.C.BOARD
S1-1
S1-2
S1-3
S1:ESH1001
RL
FL
RR
FR
HEAD:EPB1001
P.C.BOARD UNIT
M4 S904
BAND S908
LOC S912
BSM S913
IL901
IL902
IL903
IL904
D901 FWD
D902 REV
DARD UNIT

SWITCHES:
- SWITCH P.C.BOARD
  - S1:MUTE SWITCH……………………ON-OFF
  - S2:MOTOR SWITCH……………………ON-OFF
  - S3:TAPE/TUNER SWITCH…………TAPE-TUNER
- P.C.BOARD **UNIT**
  - S1:FWD/REV SWITCH………………FWD-REV

The underlined indicates the switch position.

Fig. 2

5 | 6 | 7 | 8 | 9

# 13.SCHEMATIC CIRCUIT DIAGRAM

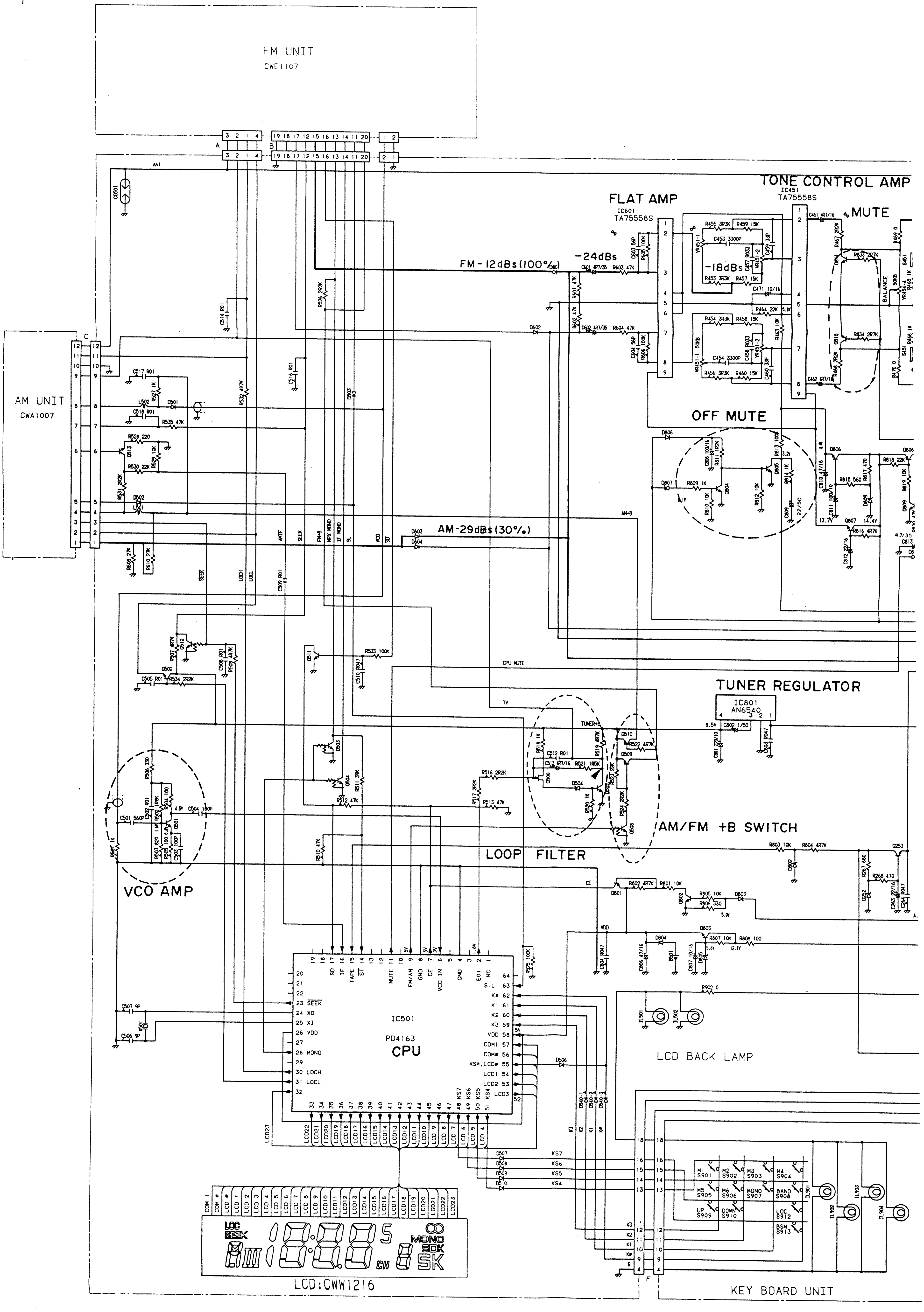
NOTE:

—┤├— : Chip capacitor.
—⩘— : Chip resistor.
—▷|— : Chip diode.
—|< : Chip transistor.

Decimal points for resistor and capacitor fixed values are expressed as:

2.2→2R2

0.022→R022



FM UNIT
CWE1107
AM UNIT
CWA1007
FLAT AMP
IC601
TA75558S
TONE CONTROL AMP
IC451
TA75558S
MUTE
BALANCE
OFF MUTE
FM-12dBs(100%)
-24dBs
-18dBs
AM-29dBs(30%)
TUNER REGULATOR
IC801
AN6540
AM/FM +B SWITCH
LOOP FILTER
VCO AMP
IC501
PD4163
CPU
LCD BACK LAMP
LCD:CWW1216
KEY BOARD UNIT
LOC
SEEK
MONO
SK
CH
CPU MUTE
TUNER+B
AM+B
ANT
SEEK
LOCH
LOCL
SD
IF
TAPE
ST
MUTE
FM/AM
GND
CE
VCO IN
EO1
NC
S.L.
XO
XI
VDD
MONO
KS7
KS6
KS5
KS4
M1 S901
M2 S902
M3 S903
M4 S904
M5 S905
M6 S906
MONO S907
BAND S908
UP S909
DOWN S910
LOC S912
BSM S913
1
2
3
4
5
A
B
C
D
E
F

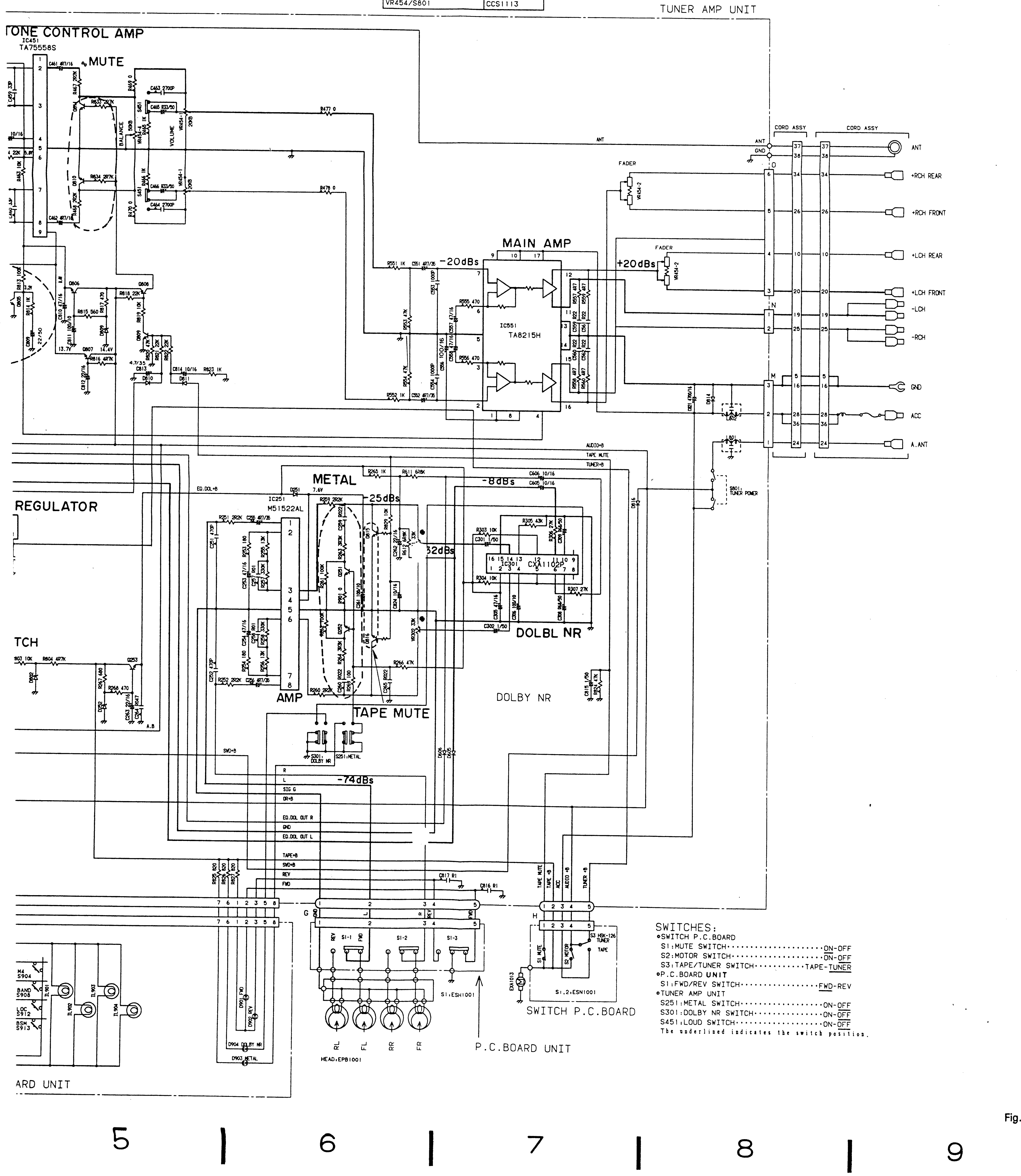
TUNER AMP UNIT

| | |
|---|---|
| Q251,252,507,802-805,<br>809 | 2SC2458<br>(2SC1740S) |
| Q253,806,807 | 2SD1919 |
| Q501 | 2SC2498 |
| Q502 | 2SC4038 |
| Q503,505,508,512 | DTC144ES |
| Q504 | DTC144EL |
| Q506 | 2SK330 |
| Q509,510 | 2SA1150 |
| Q511;513 | 2SC3113 |
| Q801,808 | 2SA1048 |
| Q810,811 | 2SD1468S |
| Q815,816 | DTC314TS |
| D251,502,503,506,601-<br>604,606,806,810,811 | 1SS133 |
| D252 | HZS9R1EB2<br>(RD9R1ESB2 |
| D501 | 1SS135 |

| | |
|---|---|
| D504 | HZS3R0EB2<br>(RD3R0ESB2) |
| D507-510,605,816 | 1S1555 |
| D540 | MA78-TR |
| D802 | HZS5R1EB2<br>(RD5R1ESB2) |
| D803 | HZS7R5EB2<br>(RD7R5ESB2) |
| D804 | MA700 |
| D805 | HZS5R6JB2<br>(RD5R6JSB2) |
| D807 | HZS8R2JB2<br>(RD8R2JSB2) |
| D809 | HZS9R1EB2<br>(RD9R1ESB2) |
| D814 | SM-3-02 |
| S251,301,451 | CSG-207 |
| IL501,502 | CEL1025 |
| VR301,302 | VRTB6VS333 |
| VR451 | CSS1114 |
| VR454/S801 | CCS1113 |

KEY BOARD UNIT

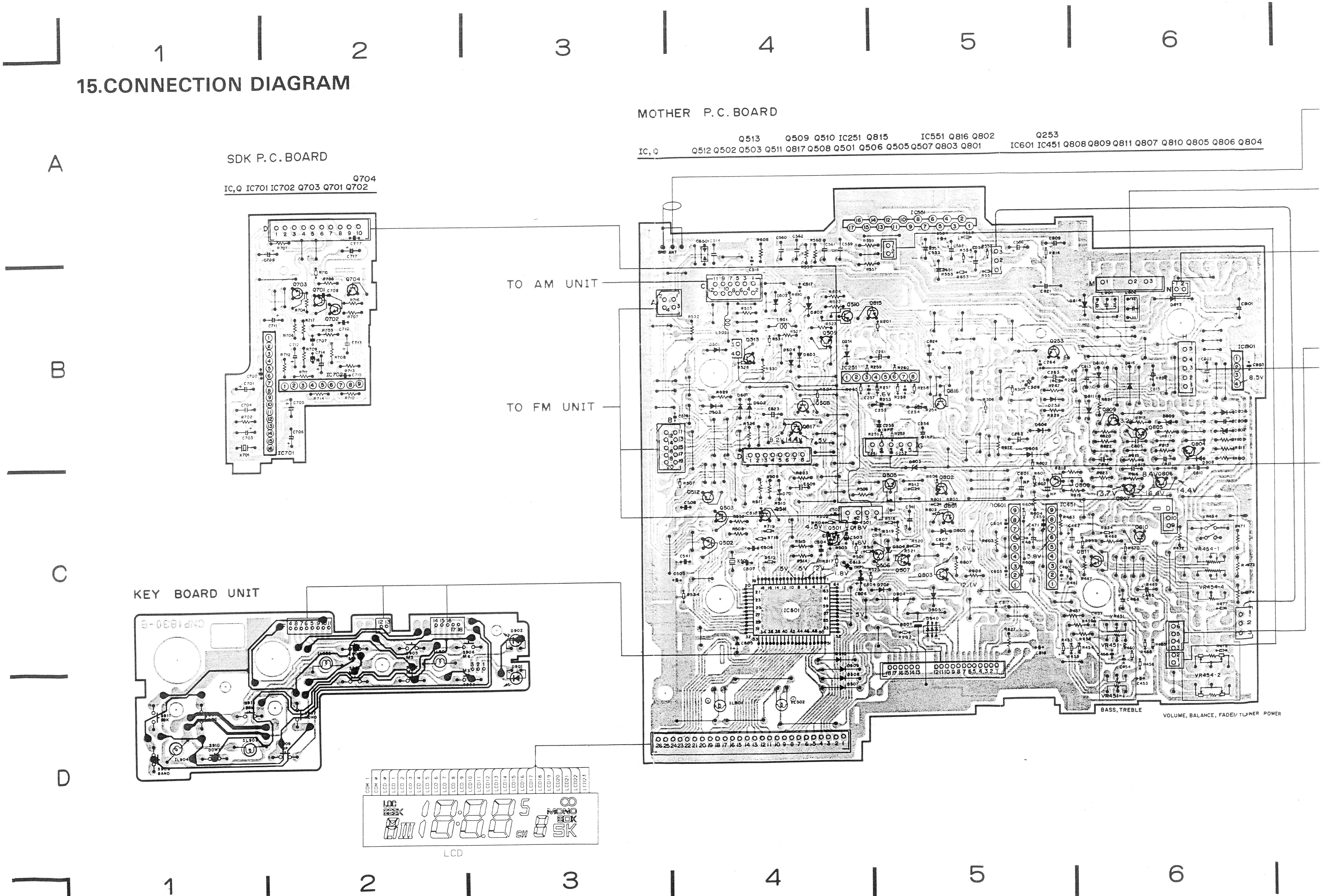
| | |
|---|---|
| D901,902 | SLR-320DU3LM |
| D903 904 | SLR-320PG3KL |
| S901-910,912,913 | CSG-253<br>(CSG1021) |
| **IL901-904** | CEL1025 |


TUNER AMP UNIT
TONE CONTROL AMP
IC451
TA75558S
MUTE
BALANCE
VOLUME
ANT
GND
CORD ASSY
CORD ASSY
ANT
FADER
+RCH REAR
+RCH FRONT
MAIN AMP
-20dBs
+20dBs
IC551
TA8215H
+LCH REAR
+LCH FRONT
-LCH
-RCH
GND
ACC
A.ANT
AUDIO+B
TAPE MUTE
TUNER+B
S801; TUNER POWER
REGULATOR
IC251
M51522AL
METAL
7.6V
-25dBs
-8dBs
-32dBs
IC301
CXA1102P
DOLBL NR
DOLBY NR
AMP
TAPE MUTE
S301; DOLBY NR
S251; METAL
TCH
-74dBs
EQ.DOL OUT R
GND
EQ.DOL OUT L
TAPE+B
SWD+B
REV
FWD
TAPE MUTE
TAPE +B
ACC
AUDIO +B
TUNER +B
S1-1
S1-2
S1-3
S1; ESH1001
HEAD; EPB1001
RL
FL
RR
FR
P.C.BOARD UNIT
S1 MUTE
S2 MOTOR
S3 HSK-126 TUNER TAPE
EXA1013
S1,2;ESN1001
SWITCH P.C.BOARD
M4 S904
BAND S908
LOC S912
BSM S913
IL901
IL902
IL903
IL904
D901 FWD
D902 REV
D904 DOLBY NR
D903 METAL
ARD UNIT
5
6
7
8
9
Fig.

SWITCHES:
- SWITCH P.C.BOARD
  - S1:MUTE SWITCH·························ON-OFF
  - S2:MOTOR SWITCH·······················ON-OFF
  - S3:TAPE/TUNER SWITCH···········TAPE-TUNER
- P.C.BOARD **UNIT**
  - S1:FWD/REV SWITCH···················FWD-REV
- TUNER AMP UNIT
  - S251:METAL SWITCH····················ON-OFF
  - S301:DOLBY NR SWITCH················ON-OFF
  - S451:LOUD SWITCH······················ON-OFF

The underlined indicates the switch position.

# 15.CONNECTION DIAGRAM


1
2
3
4
5
6
A
B
C
D
SDK P.C. BOARD
IC,Q IC701 IC702 Q703 Q701 Q702 Q704
MOTHER P.C. BOARD
IC,Q Q512 Q502 Q503 Q513 Q511 Q817 Q509 Q508 Q510 Q501 IC251 Q506 Q815 Q505 Q507 IC551 Q803 Q816 Q801 Q802 IC601 IC451 Q253 Q808 Q809 Q811 Q807 Q810 Q805 Q806 Q804
TO AM UNIT
TO FM UNIT
KEY BOARD UNIT
CNP1830-B
IC501
IC551
IC251
IC601
IC451
IC801
8.5V
BASS, TREBLE
VOLUME, BALANCE, FADER/TUNER POWER
LCD
LOC
SEEK
MONO
SDK
SK
CH

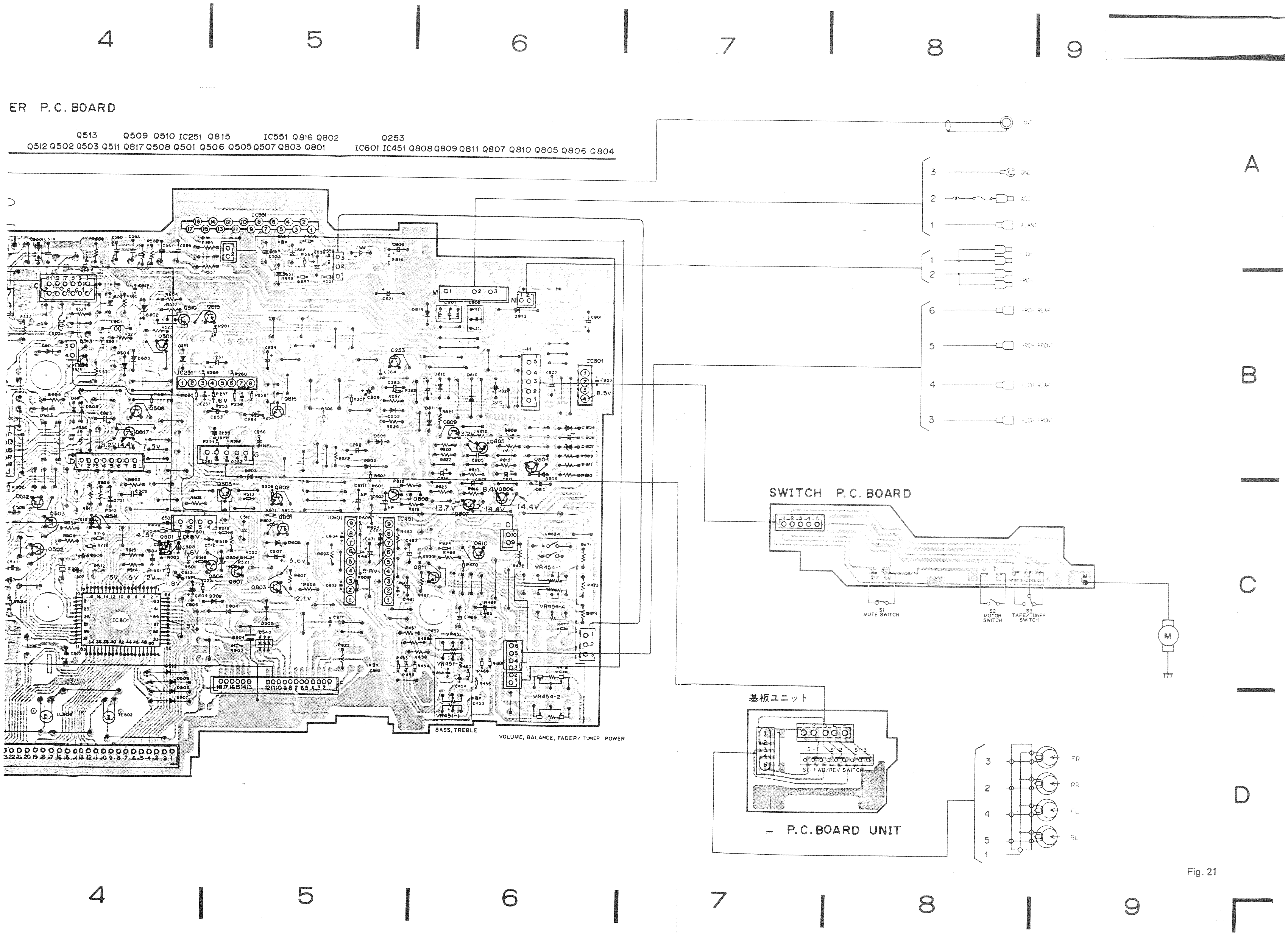
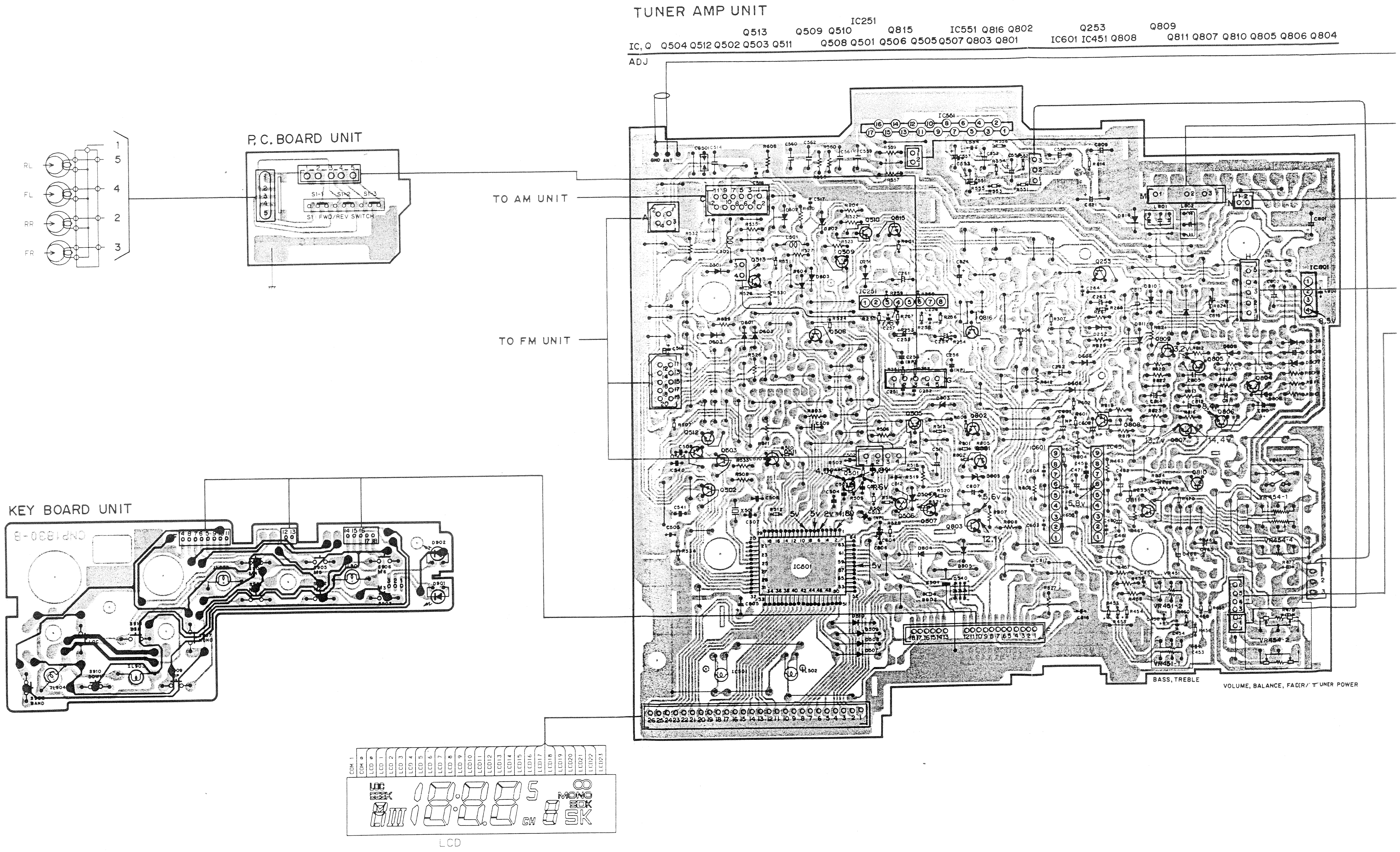

4
5
6
7
8
9
A
B
C
D
ER P.C. BOARD
Q513 Q509 Q510 IC251 Q815 IC551 Q816 Q802 Q253
Q512 Q502 Q503 Q511 Q817 Q508 Q501 Q506 Q505 Q507 Q803 Q801 IC601 IC451 Q808 Q809 Q811 Q807 Q810 Q805 Q806 Q804
IC551
IC251
IC601
IC451
IC801
8.5V
14.4V
13.7V
8.4V
12.1V
5.6V
5.8V
BASS, TREBLE
VOLUME, BALANCE, FADER/TUNER POWER
VR454-1
VR454-4
VR454-2
VR451-1
VR451-2
SWITCH P.C. BOARD
S1 MUTE SWITCH
S2 MOTOR SWITCH
S3 TAPE/TUNER SWITCH
M
基板ユニット
S1 FWD/REV SWITCH
P.C. BOARD UNIT
ANT
GND
ACC
A.ANT
LCH
RCH
RCH REAR
RCH FRONT
LCH REAR
LCH FRONT
FR
RR
FL
RL

Fig. 21

# 16.CONNECTION DIAGRAM


1
2
3
4
5
6
A
B
C
D
TUNER AMP UNIT
IC, Q
ADJ
Q504 Q512 Q502 Q503 Q511
Q513
Q509 Q510
IC251
Q508 Q501 Q506 Q505
Q815
IC551 Q816 Q802
Q507 Q803 Q801
Q253
IC601 IC451 Q808
Q809
Q811 Q807 Q810 Q805 Q806 Q804
P.C. BOARD UNIT
S1 FWD/REV SWITCH
RL
FL
RR
FR
TO AM UNIT
TO FM UNIT
KEY BOARD UNIT
IC601
IC551
IC801
BASS, TREBLE
VOLUME, BALANCE, FADER/TUNER POWER
LCD
LOC
SEEK
MONO
CH
SK

4 5 6 7 8 9

## ER AMP UNIT

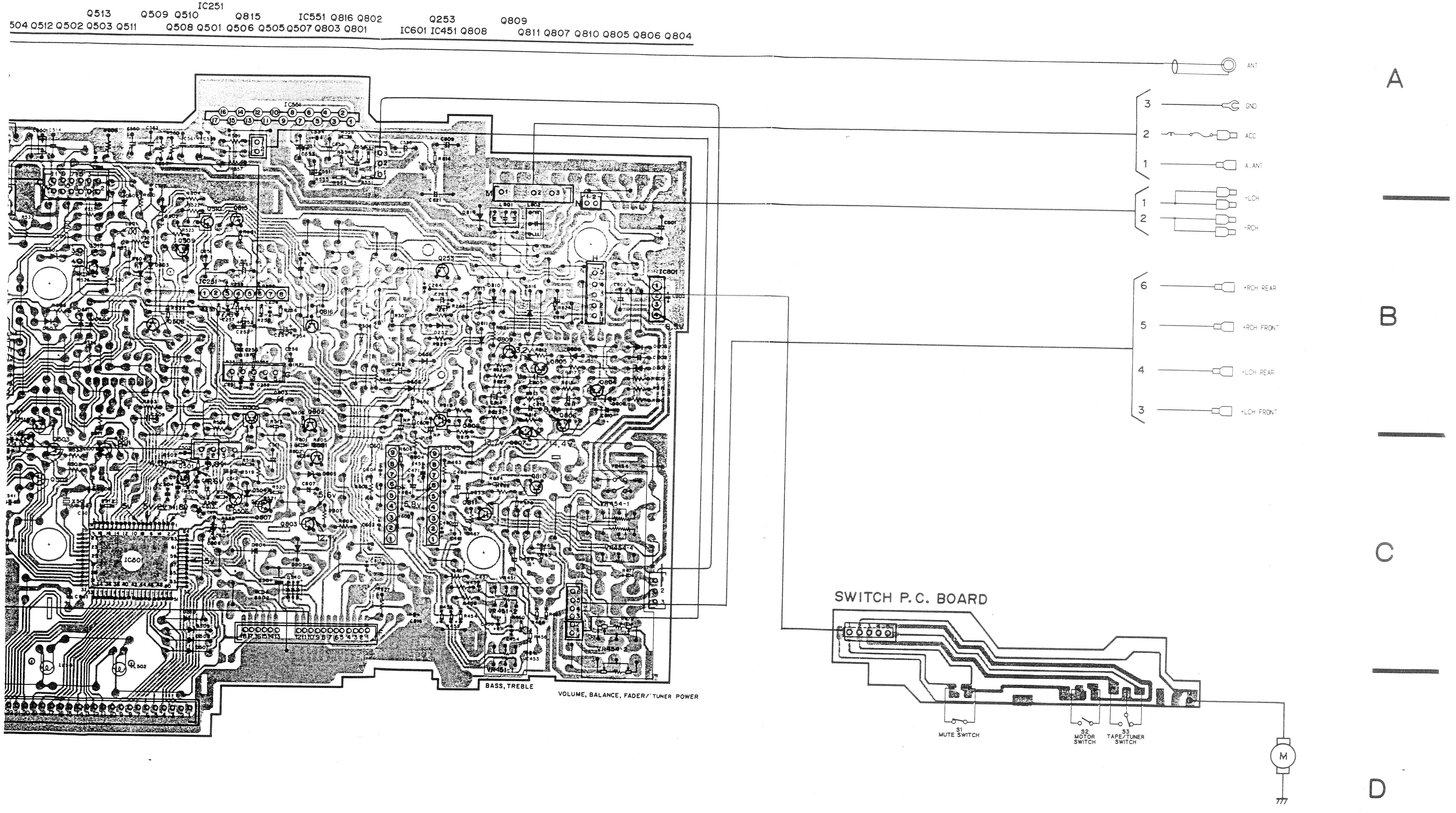

Q513
Q509 Q510
IC251
Q815
IC551 Q816 Q802
Q253
Q809
504 Q512 Q502 Q503 Q511
Q508 Q501 Q506 Q505 Q507 Q803 Q801
IC601 IC451 Q808
Q811 Q807 Q810 Q805 Q806 Q804
IC551
IC251
IC501
IC601
IC801
BASS, TREBLE
VOLUME, BALANCE, FADER/TUNER POWER
ANT
3 GND
2 ACC
1 A.ANT
1 +LCH
2 -RCH
6 +RCH REAR
5 +RCH FRONT
4 +LCH REAR
3 +LCH FRONT
SWITCH P.C. BOARD
S1 MUTE SWITCH
S2 MOTOR SWITCH
S3 TAPE/TUNER SWITCH
M
A
B
C
D

Fig. 22

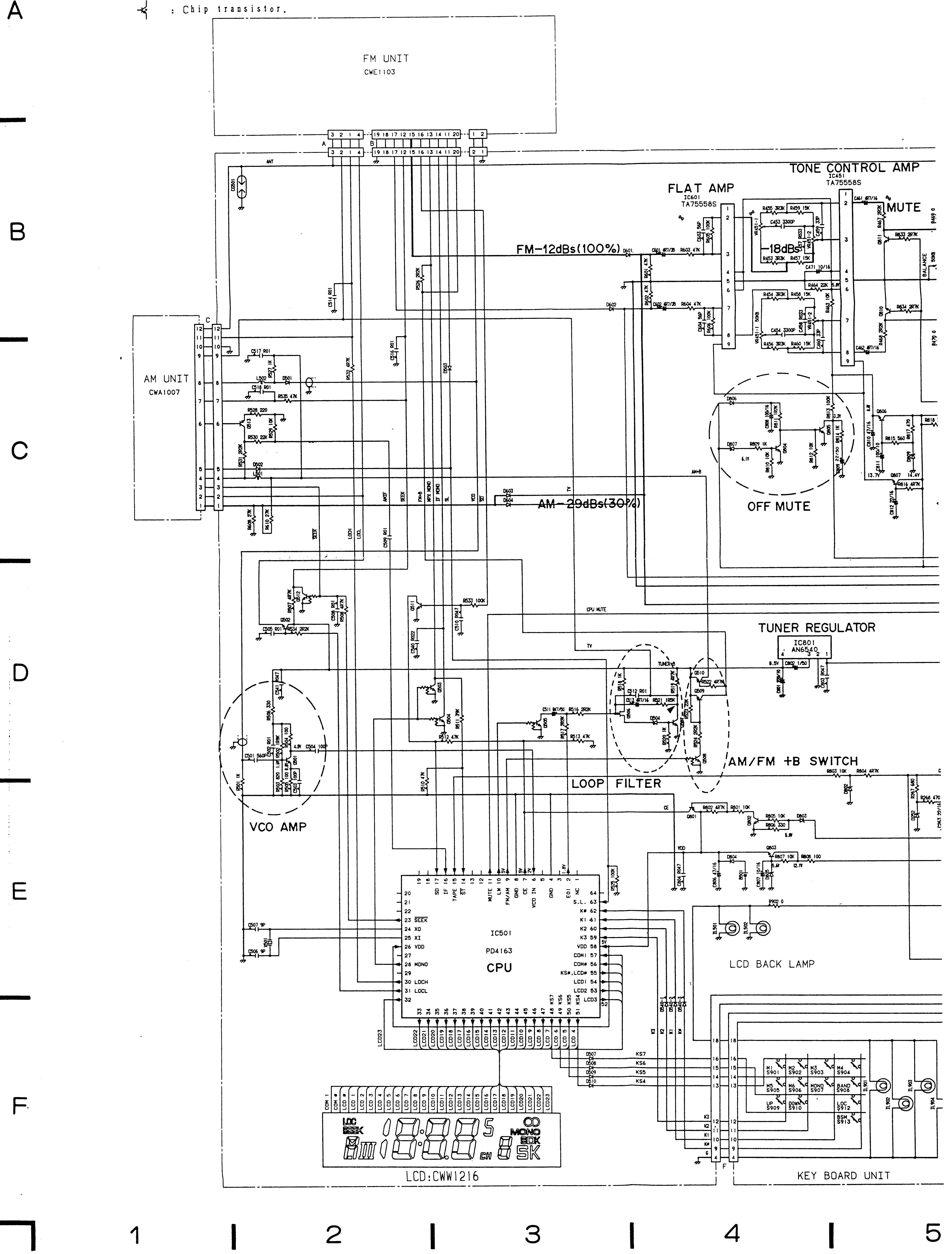
4 5 6 7 8 9

# 17.SCHEMATIC CIRCUIT DIAGRAM

NOTE:

—||— : Chip capacitor.
—w— : Chip resistor.
—▷|— : Chip diode.
—K : Chip transistor.

Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022


FM UNIT
CWE1103
AM UNIT
CWA1007
ANT
FLAT AMP
IC601
TA75558S
TONE CONTROL AMP
IC451
TA75558S
MUTE
BALANCE
FM-12dBs(100%)
AM-29dBs(30%)
-18dBs
OFF MUTE
TUNER REGULATOR
IC801
AN6540
CPU MUTE
TV
SEEK
LOCH
LOCL
AMIF
FM+B
MPX MONO
IF MONO
SL
VDD
ST
LOOP FILTER
AM/FM +B SWITCH
VCO AMP
IC501
PD4163
CPU
LCD BACK LAMP
LCD:CWW1216
KEY BOARD UNIT
M1 S901
M2 S902
M3 S903
M4 S904
M5 S905
M6 S906
MONO S907
BAND S908
UP S909
DOWN S910
LOC S912
BSM S913
LOC
SEEK
MONO
DX
5K
A
B
C
D
E
F
1
2
3
4
5

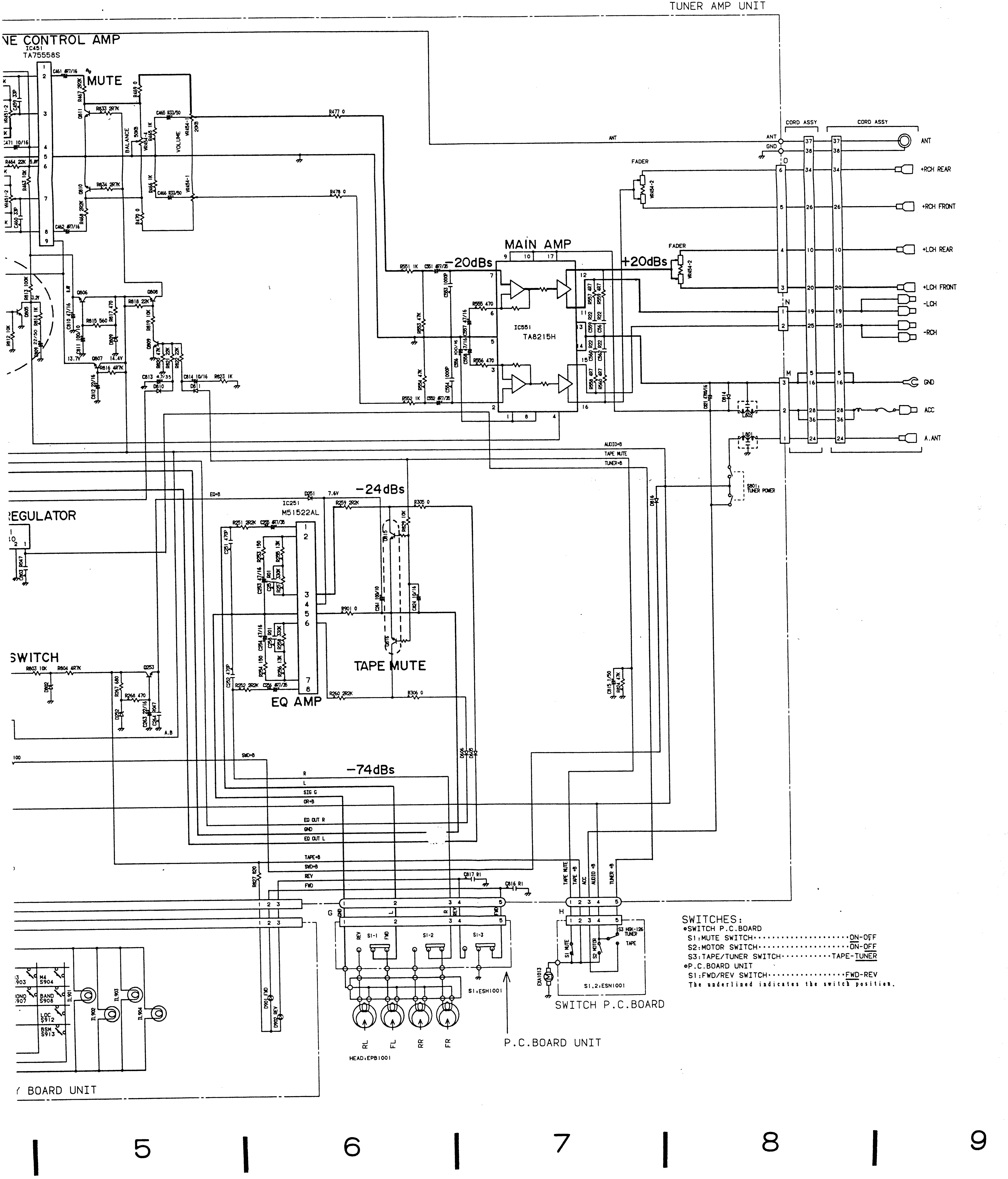
TUNER AMP UNIT

| | |
|---|---|
| Q253,806,807 | 2SD1919 |
| Q501 | 2SC2498 |
| Q502 | 2SC4038 |
| Q503,505,508,512 | DTC144ES |
| Q504 | DTC144EL |
| Q506 | 2SK330 |
| Q507,802-805,809 | 2SC2458<br>(2SC1740S) |
| Q509,510 | 2SA1150 |
| Q511,513 | 2SC3113 |
| Q801,808 | 2SA1048 |
| Q810,811 | 2SD1468S |
| Q815,816 | DTC314TS |
| D251,502,503,601-604,<br>606,806,810,811 | 1SS133 |
| D252 | HZS9R1EB2<br>(RD9R1ESB2) |
| D501 | 1SS135 |

| | |
|---|---|
| D50 | HZS3R0EB2<br>(RD3R0ESB2) |
| D507-510,605,816 | 1S1555 |
| D540 | MA78-TR |
| D802 | HZS5R1EB2<br>(RD5R1ESB2) |
| D803 | HZS7R5EB2<br>(RD7R5ESB2) |
| D804 | MA700 |
| D805 | HZS5R6JB2<br>(RD5R6JSB2) |
| D807 | HZS8R2JB2<br>(RD8R2JSB2) |
| D809 | HZS9R1EB2<br>(RD9R1ESB2) |
| D814 | SM-3-02 |
| IL501,502 | CEL1025 |
| VR451 | CSS1114 |
| VR454/S801 | CCS1113 |

KEY BOARD UNIT

| | |
|---|---|
| D901,902 | SLR-320DU3LM |
| S901-910,912,913 | CSG-253<br>(CSG1021) |
| IL901-904 | CEL1025 |



TUNER AMP UNIT
NE CONTROL AMP
IC451
TA75558S
MUTE
BALANCE
VOLUME
MAIN AMP
-20dBs
+20dBs
IC551
TA8215H
FADER
CORD ASSY
ANT
GND
+RCH REAR
+RCH FRONT
+LCH REAR
+LCH FRONT
-LCH
-RCH
ACC
A.ANT
S801: TUNER POWER
AUDIO+B
TAPE MUTE
TUNER+B
REGULATOR
IC251
M51522AL
-24dBs
TAPE MUTE
EQ AMP
SWITCH
-74dBs
R
L
SIG G
DR+B
ED OUT R
GND
ED OUT L
TAPE+B
SWD+B
REV
FWD
S1-1
S1-2
S1-3
S1:ESH1001
HEAD:EPB1001
RL
FL
RR
FR
P.C.BOARD UNIT
S3 MSK-126
TUNER
TAPE
S1 MUTE
S2 MOTOR
S1,2:ESN1001
EXA1013
SWITCH P.C.BOARD
M4 S904
BAND S908
LOC S912
BSM S913
IL901
IL902
IL903
IL904
D901 FWD
D902 REV
BOARD UNIT
5
6
7
8
9

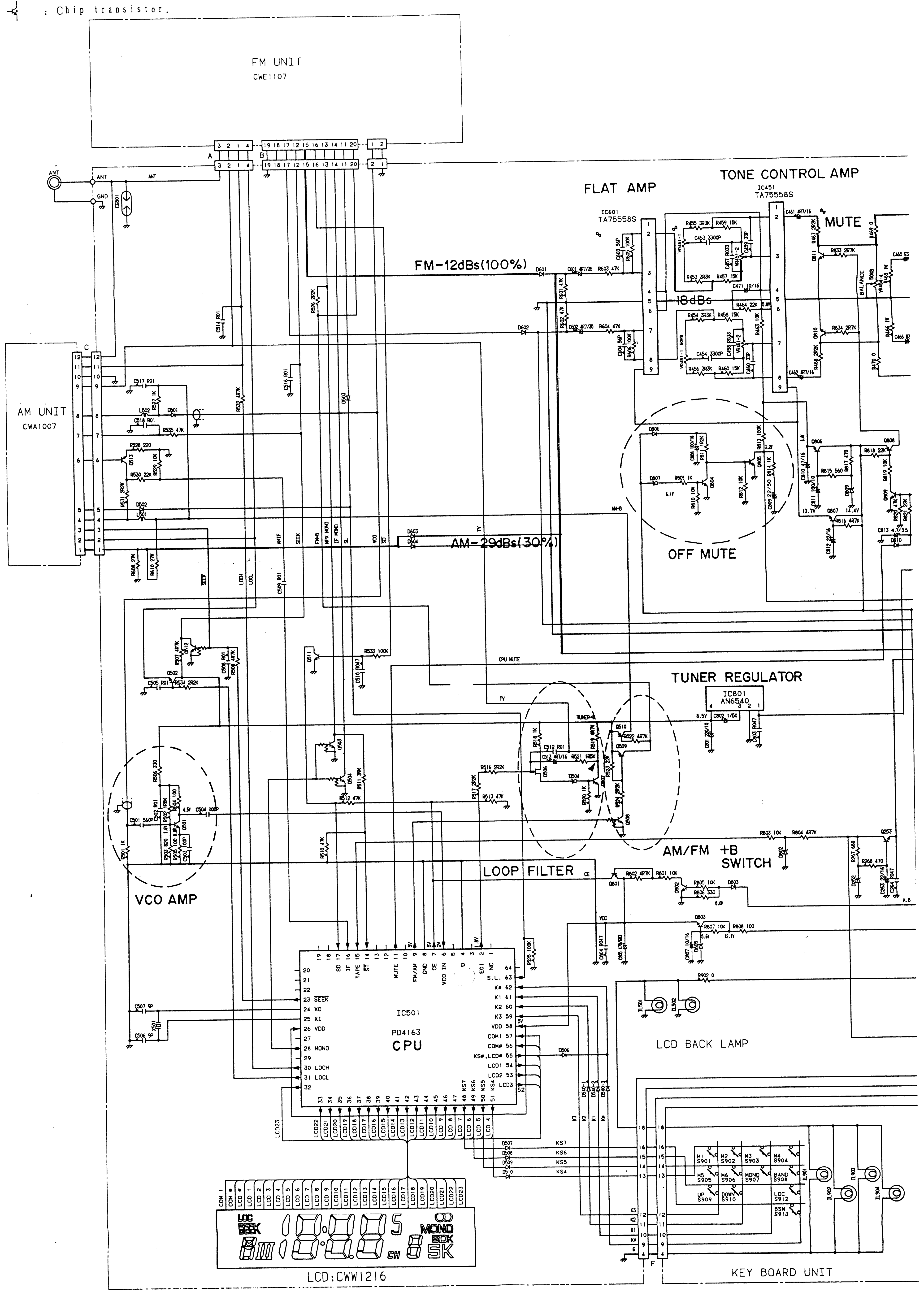
SWITCHES:
●SWITCH P.C.BOARD
S1:MUTE SWITCH······················ON-OFF
S2:MOTOR SWITCH····················ON-OFF
S3:TAPE/TUNER SWITCH···········TAPE-TUNER
●P.C.BOARD UNIT
S1:FWD/REV SWITCH·····················FWD-REV
The underlined indicates the switch position.

# 18.SCHEMATIC CIRCUIT DIAGRAM

NOTE:

- : Chip capacitor.
- : Chip resistor.
- : Chip diode.
- : Chip transistor.

Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022


FM UNIT
CWE1107
ANT
GND
D501
AM UNIT
CWA1007
FLAT AMP
IC601
TA75558S
TONE CONTROL AMP
IC451
TA75558S
MUTE
BALANCE
FM-12dBs(100%)
18dBs
AM-29dBs(30%)
OFF MUTE
TUNER REGULATOR
IC801
AN6540
AM/FM +B SWITCH
LOOP FILTER
VCO AMP
CPU MUTE
IC501
PD4163
CPU
LCD BACK LAMP
KEY BOARD UNIT
M1 S901
M2 S902
M3 S903
M4 S904
M5 S905
M6 S906
MONO S907
BAND S908
UP S909
DOWN S910
LOC S912
BSM S913
LCD:CWW1216
LOC
SEEK
MONO
5K

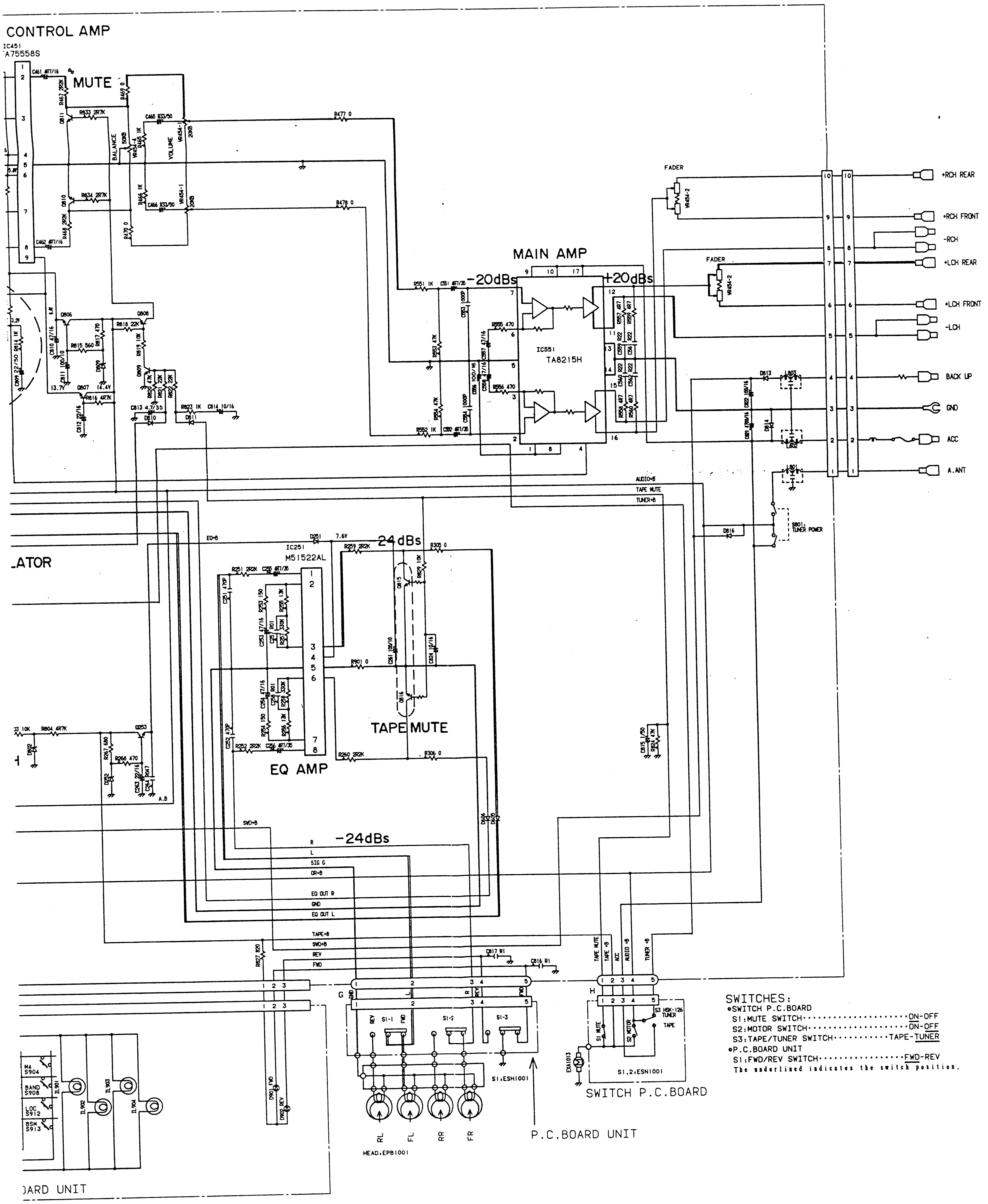
TUNER AMP UNIT

| | |
|---|---|
| Q253,806,807 | 2SD1919 |
| Q501 | 2SC2498 |
| Q502 | 2SC4038 |
| Q503,508,512 | DTC144ES |
| Q504 | DTC144EL |
| Q506 | 2SK330 |
| Q507,802-805,809 | 2SC2458<br>(2SC1740S) |
| Q509,510 | 2SA1150 |
| Q511,513 | 2SC3113 |
| Q801,808 | 2SA1048 |
| Q810,811 | 2SD1468S |
| Q815,816 | DTC314TS |
| D251,502,503,506,601-604,606,806,810,811 | 1SS133 |
| D252 | HZS9R1EB2<br>(RD9R1ESB2) |
| D501 | 1SS135 |

| | |
|---|---|
| D504 | HZS3R0EB2<br>(RD3R0ESB2) |
| D507-510,605,813,816 | 1S1555 |
| D540 | MA78-TR |
| D802 | HZS5R1EB2<br>(RD5R1ESB2) |
| D803 | HZS7R5EB2<br>(RD7R5ESB2) |
| D805 | HZS5R6JB2<br>(RD5R6JSB2) |
| D807 | HZS8R2JB2<br>(RD8R2JSB2) |
| D809 | HZS9R1EB2<br>(RD9R1ESB2) |
| D814 | SM-3-02 |
| IL501,502 | CEL1025 |
| VR451 | CSS1114 |
| VR454/S801 | CCS1113 |

KEY BOARD UNIT

| | |
|---|---|
| D901,902 | SLR-320DU3LM |
| S901-910,912,913 | CSG-253<br>(CSG1021) |
| IL901-904 | CEL1025 |


TUNER AMP UNIT
CONTROL AMP
IC451
A75558S
MUTE
BALANCE
VOLUME
VR454-1
MAIN AMP
-20dBs
+20dBs
IC551
TA8215H
FADER
VR454-2
+RCH REAR
+RCH FRONT
-RCH
+LCH REAR
+LCH FRONT
-LCH
BACK UP
GND
ACC
A.ANT
AUDIO+B
TAPE MUTE
TUNER+B
S801: TUNER POWER
LATOR
IC251
M51522AL
24dBs
TAPE MUTE
EQ AMP
-24dBs
R
L
SIG G
DR+B
EQ OUT R
GND
EQ OUT L
TAPE+B
SWD+B
REV
FWD
G
H
S1-1
S1-2
S1-3
S1:ESH1001
S1 MUTE
S2 MOTOR
S3 HSK-126 TUNER
TAPE
S1,2:ESN1001
EXA1013
SWITCH P.C.BOARD
P.C.BOARD UNIT
RL
FL
RR
FR
HEAD:EPB1001
M4 S904
BAND S908
LOC S912
BSM S913
IL901
IL902
IL903
IL904
D901 FWD
D902 REV
ARD UNIT

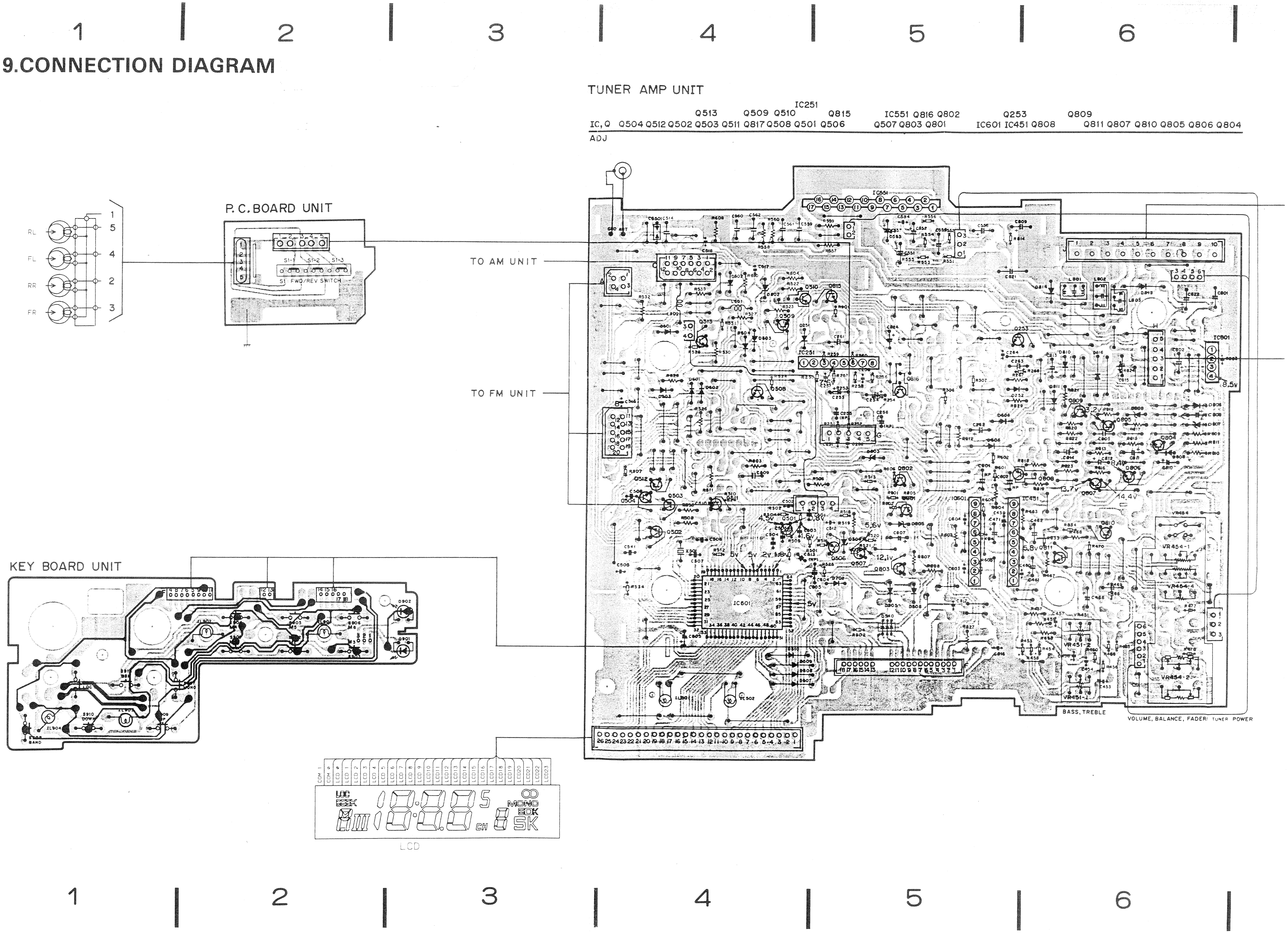
SWITCHES:

- SWITCH P.C.BOARD
  - S1:MUTE SWITCH··························ON-OFF
  - S2:MOTOR SWITCH·························ON-OFF
  - S3:TAPE/TUNER SWITCH··············TAPE-TUNER
- P.C.BOARD UNIT
  - S1:FWD/REV SWITCH····················FWD-REV

The underlined indicates the switch position.

Fig. 2

# 19.CONNECTION DIAGRAM


1
2
3
4
5
6
A
B
C
D
TUNER AMP UNIT
IC, Q
ADJ
Q504 Q512 Q502 Q513 Q503 Q511 Q509 Q817 Q510 Q508 IC251 Q501 Q815 Q506 IC551 Q507 Q816 Q803 Q802 Q801 IC601 Q253 IC451 Q808 Q809 Q811 Q807 Q810 Q805 Q806 Q804
P.C. BOARD UNIT
S1: FWD/REV SWITCH
RL
FL
RR
FR
TO AM UNIT
TO FM UNIT
KEY BOARD UNIT
BASS, TREBLE
VOLUME, BALANCE, FADER/ TUNER POWER
IC601
IC551
IC251
IC451
IC801
LCD

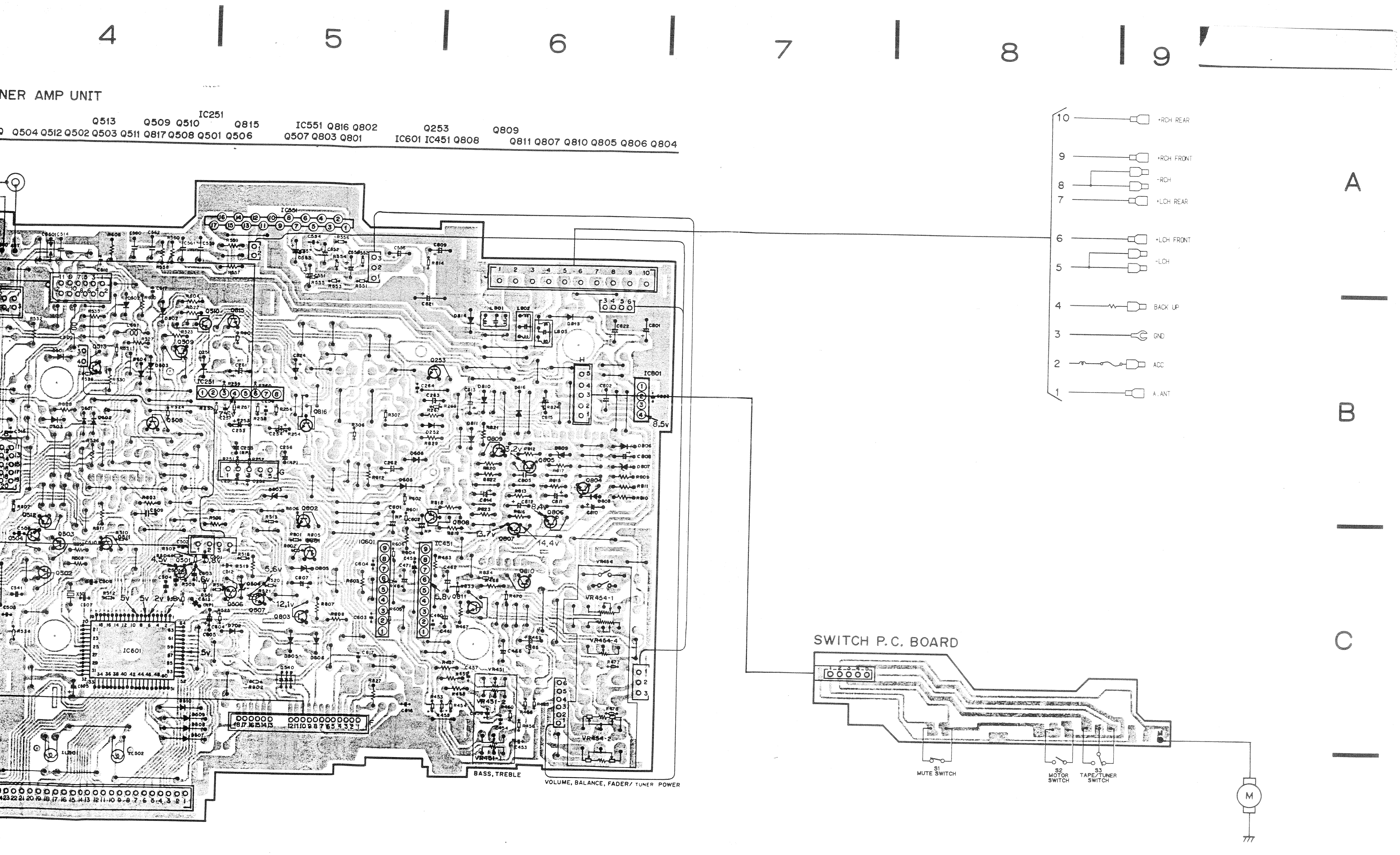
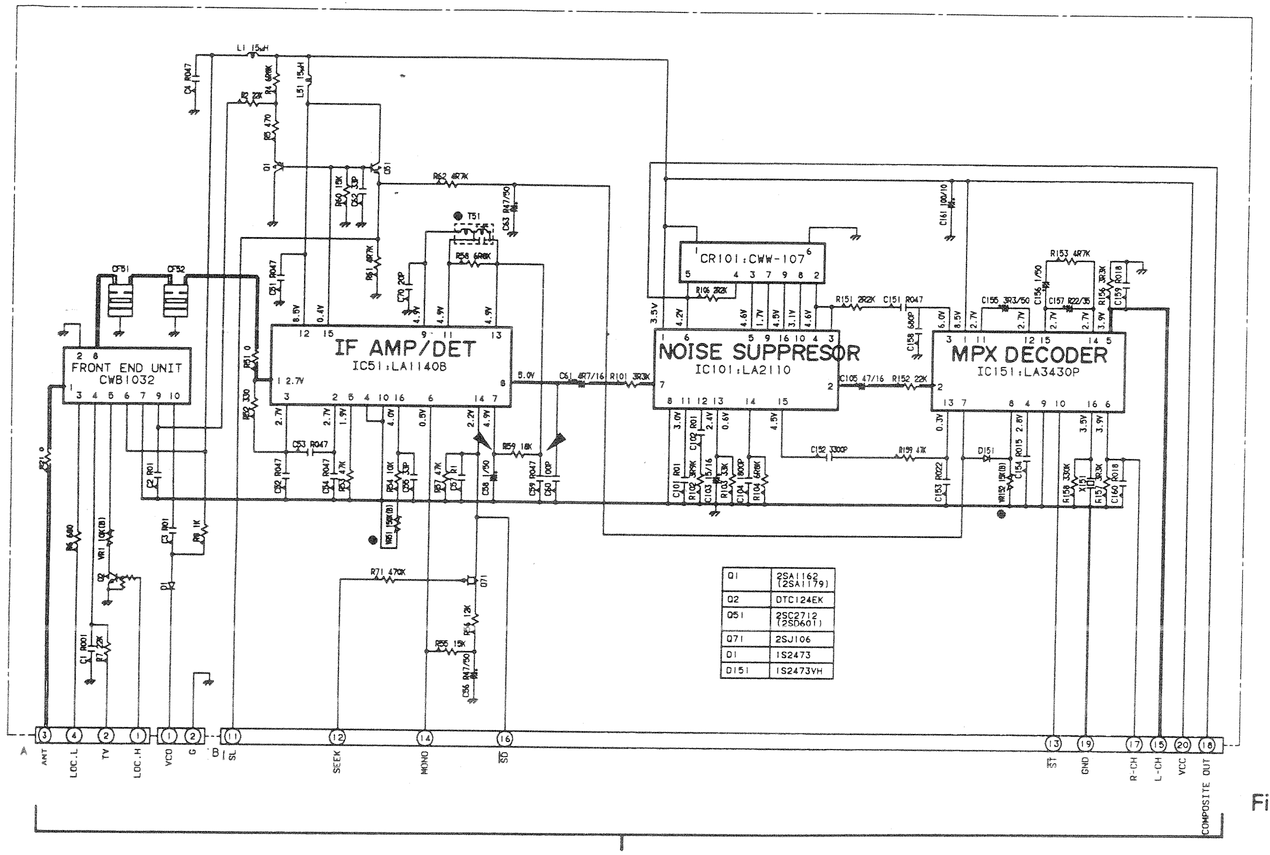

4
5
6
7
8
9
NER AMP UNIT
Q513
Q509 Q510
IC251
Q815
IC551 Q816 Q802
Q253
Q809
Q504 Q512 Q502 Q503 Q511 Q817 Q508 Q501 Q506
Q507 Q803 Q801
IC601 IC451 Q808
Q811 Q807 Q810 Q805 Q806 Q804
10 +RCH REAR
9 +RCH FRONT
8 -RCH
7 +LCH REAR
6 +LCH FRONT
5 -LCH
4 BACK UP
3 GND
2 ACC
1 A.ANT
A
B
C
D
IC551
IC251
IC801
IC601
IC451
8.5v
BASS, TREBLE
VOLUME, BALANCE, FADER/ TUNER POWER
SWITCH P.C. BOARD
S1
MUTE SWITCH
S2
MOTOR
SWITCH
S3
TAPE/TUNER
SWITCH
M
4
5
6
7
8
9

Fig. 25

# 20.CIRCUIT DIAGRAM AND P.C. BOARDS PATTERN

## 20.1 FM Unit (WG, EW)

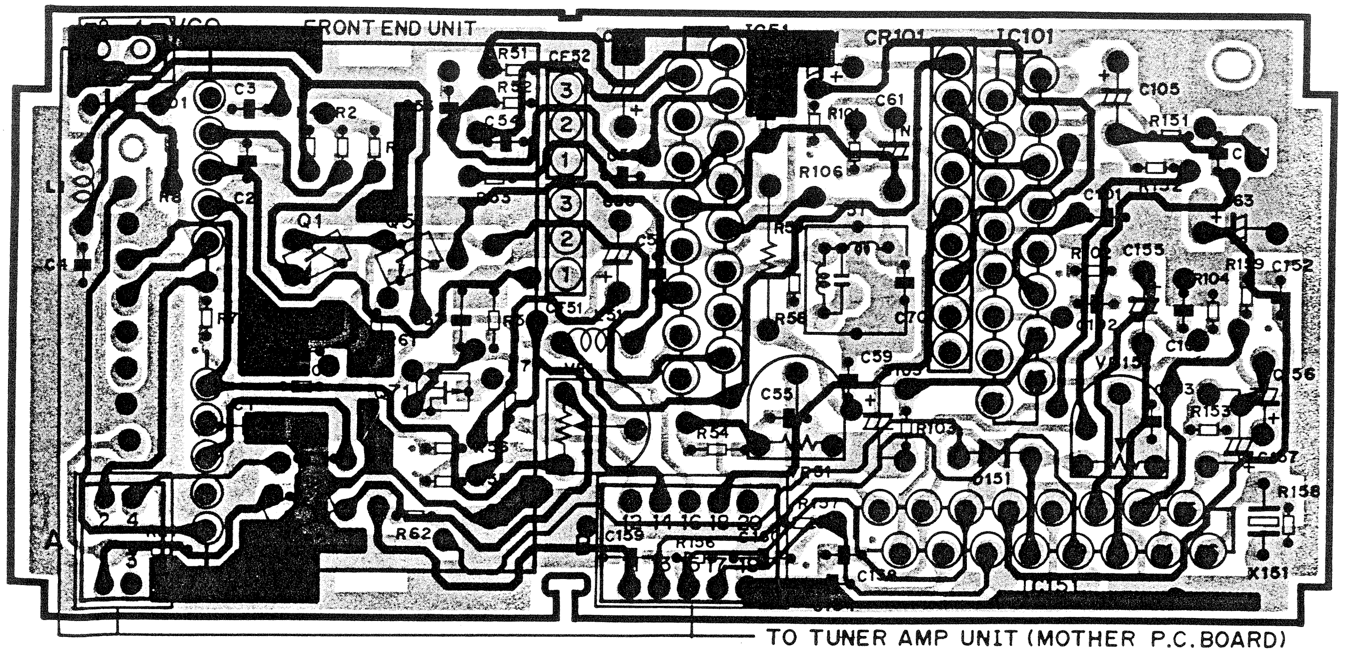

FRONT END UNIT
CWB1032
IF AMP/DET
IC51:LA1140B
NOISE SUPPRESOR
IC101:LA2110
MPX DECODER
IC151:LA3430P
CR101:CWW-107
T51
VR1
ANT
LOC.L
TV
LOC.H
VCO
G
SL
SEEK
MONO
ST
GND
R-CH
L-CH
VCC
COMPOSITE OUT
A
B

| | |
|---|---|
| Q1 | 2SA1162<br>(2SA1179) |
| Q2 | DTC124EK |
| Q51 | 2SC2712<br>(2SD601) |
| Q71 | 2SJ106 |
| D1 | 1S2473 |
| D151 | 1S2473VH |

Fig. 26

TO TUNER AMP UNIT (MOTHER P.C.BOARD)

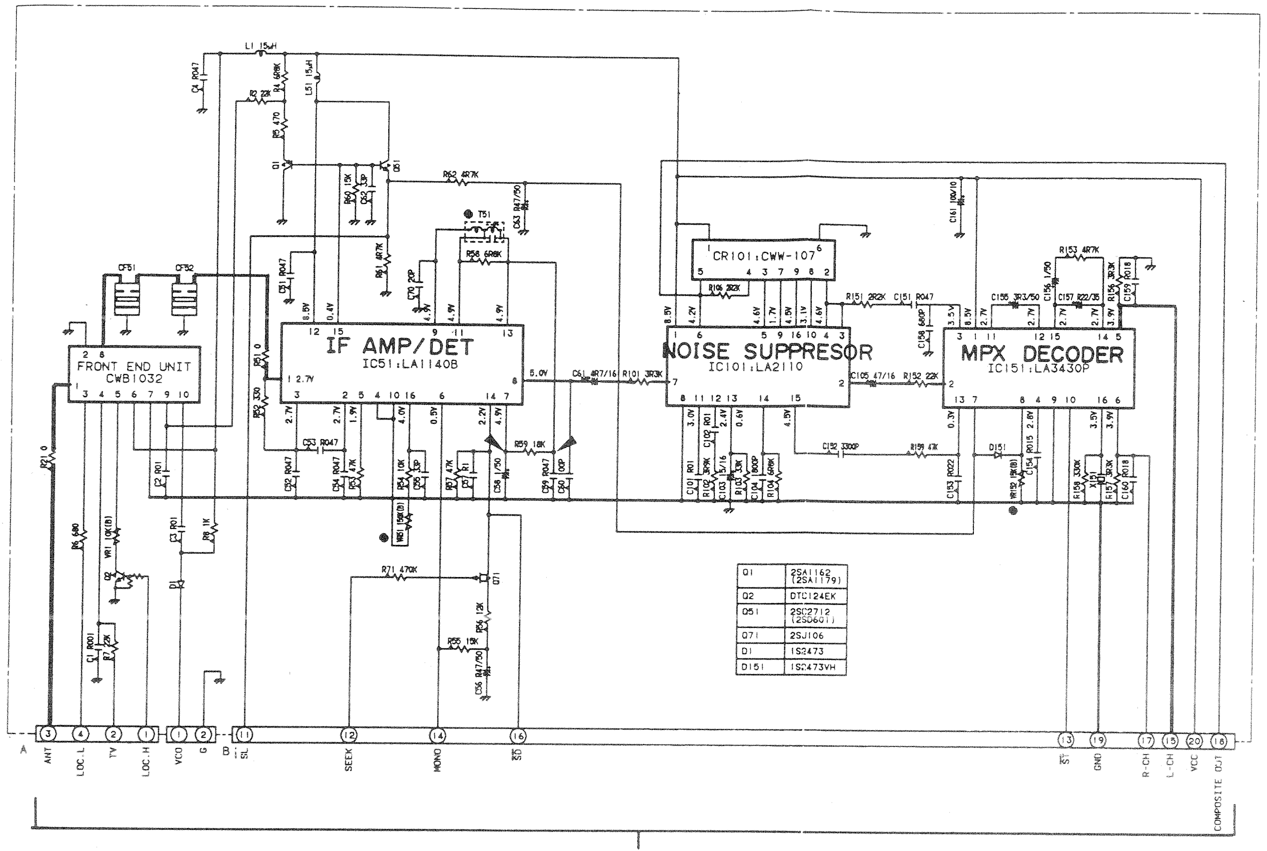
| IC,Q | Q1<br>Q2 | Q51 Q71 | IC51 | IC101 IC151 |
|---|---|---|---|---|
| ADJ. | VR1 | VR51 T51 | VR152 | |


FRONT END UNIT
CR101
IC101
IC51
IC151
R51
CF52
R52
C54
C3
R2
C2
Q1
C61
R106
C105
R131
R101
C155
R104
R159
C152
C56
C70
C59
C55
R54
R103
D151
R153
C157
R158
X151
R62
C159
R156
C158
T51
VR1
VR152
A
B

TO TUNER AMP UNIT (MOTHER P.C.BOARD)

Fig. 27

## 20.2 FM Unit (ES)

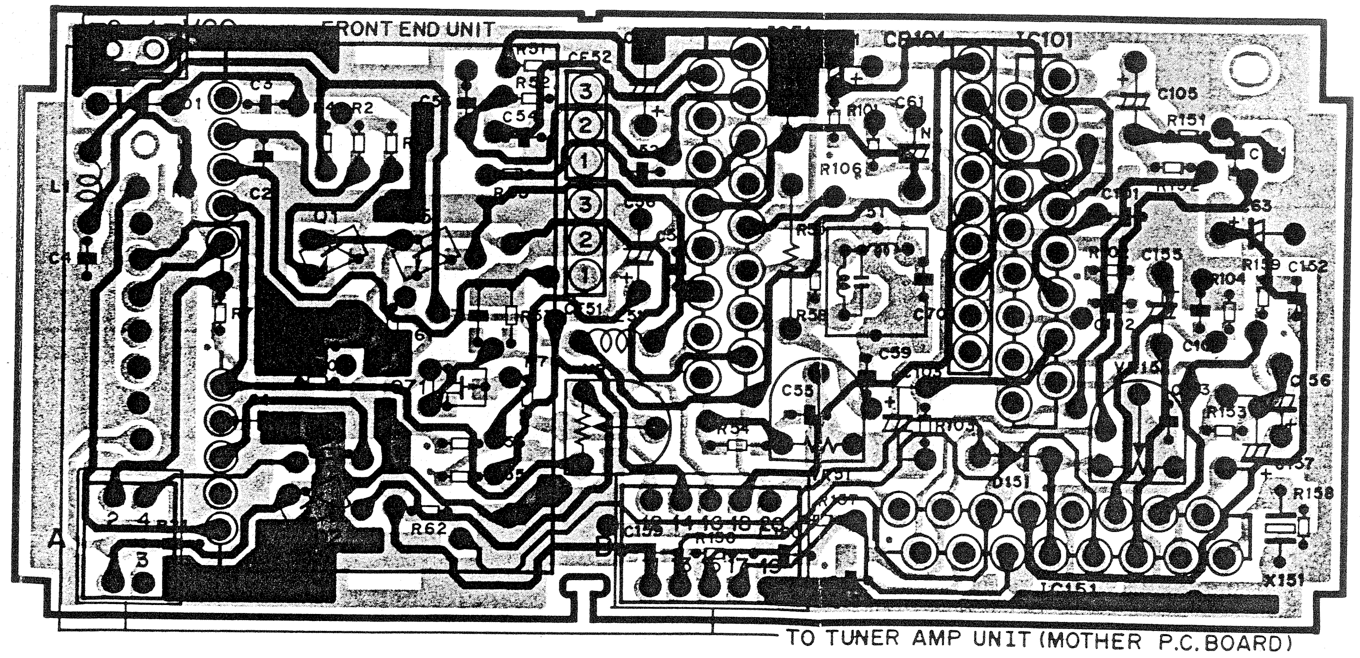

FRONT END UNIT
CWB1032
IF AMP/DET
IC51:LA1140B
NOISE SUPPRESOR
IC101:LA2110
MPX DECODER
IC151:LA3430P
CR101:CWW-107
T51
VR1
ANT
LOC.L
TV
LOC.H
VCO
G
SL
SEEK
MONO
ST
GND
R-CH
L-CH
VCC
COMPOSITE OUT
A
B

| | |
|---|---|
| Q1 | 2SA1162<br>(2SA1179) |
| Q2 | DTC124EK |
| Q51 | 2SC2712<br>(2SD601) |
| Q71 | 2SJ106 |
| D1 | 1S2473 |
| D151 | 1S2473VH |

Fig. 28

TO TUNER AMP UNIT (MOTHER P.C. BOARD)

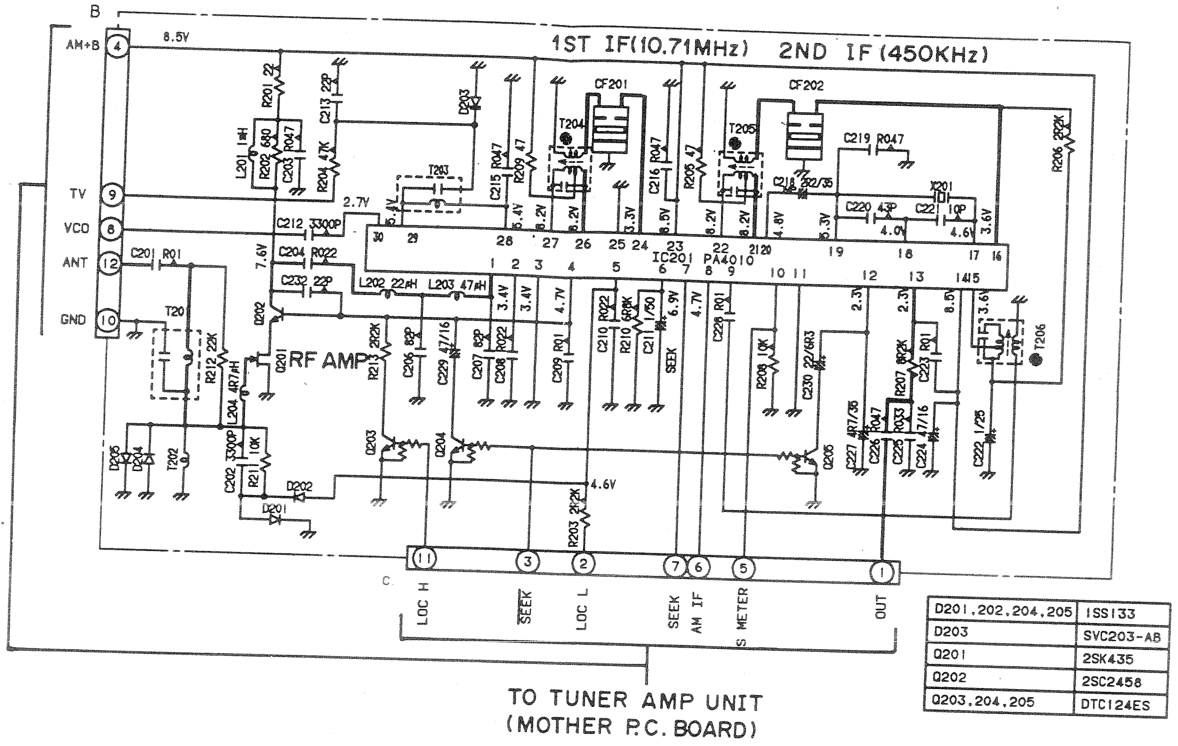
| IC,Q | Q1<br>Q2 | Q51 Q71 | IC51 | IC101 IC151 |
|---|---|---|---|---|
| ADJ. | VR1 | VR51 T51 | VR152 | |


FRONT END UNIT
CR101
IC101
IC51
IC151
R51
CF52
R52
C54
C3
R2
C2
Q1
C61
R106
C105
R151
R104
R159
C152
C155
C56
C70
C59
C55
R54
R103
D151
R153
C157
R158
X151
R62
C159
R156
A
B

TO TUNER AMP UNIT (MOTHER P.C.BOARD)

Fig. 29

## 20.3 AM Unit


1ST IF(10.71MHz)
2ND IF(450KHz)
AM+B
TV
VCO
ANT
GND
8.5V
RF AMP
IC201 PA4010
CF201
CF202
T204
T205
T206
LOC H
SEEK
LOC L
SEEK
AM IF
S METER
OUT
TO TUNER AMP UNIT
(MOTHER P.C. BOARD)

| | |
|---|---|
| D201,202,204,205 | 1SS133 |
| D203 | SVC203-AB |
| Q201 | 2SK435 |
| Q202 | 2SC2458 |
| Q203,204,205 | DTC124ES |

Fig. 30

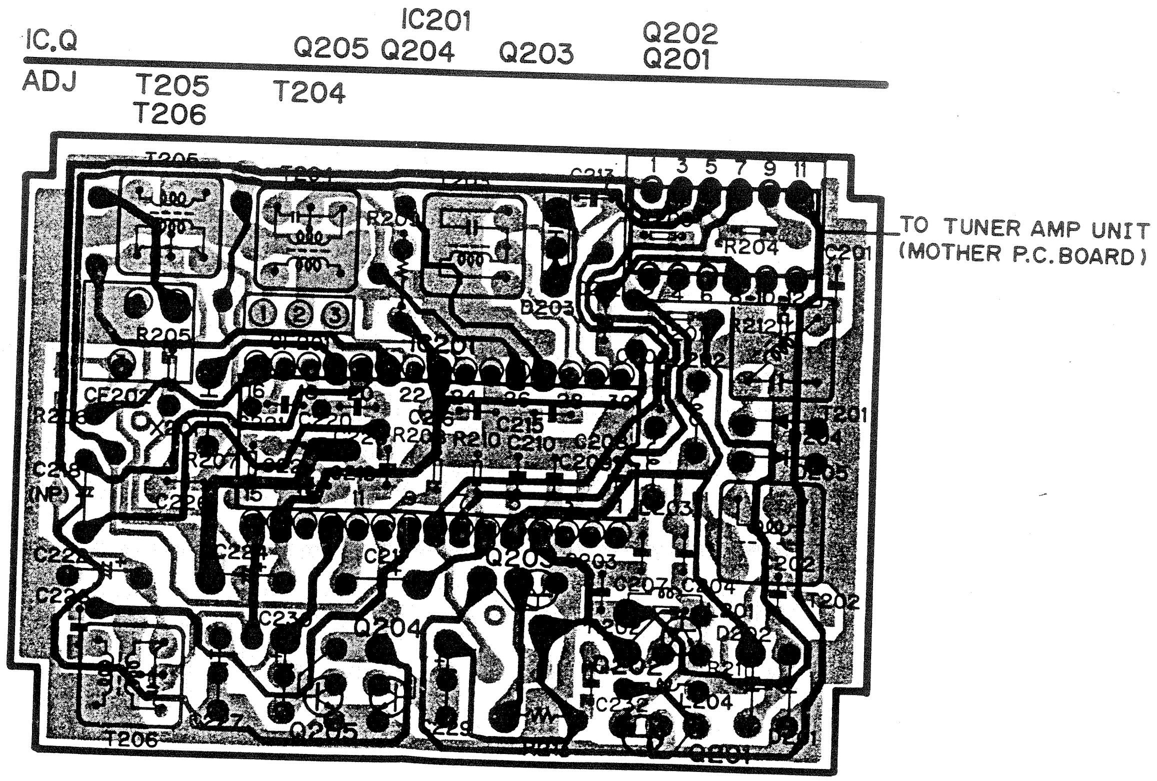
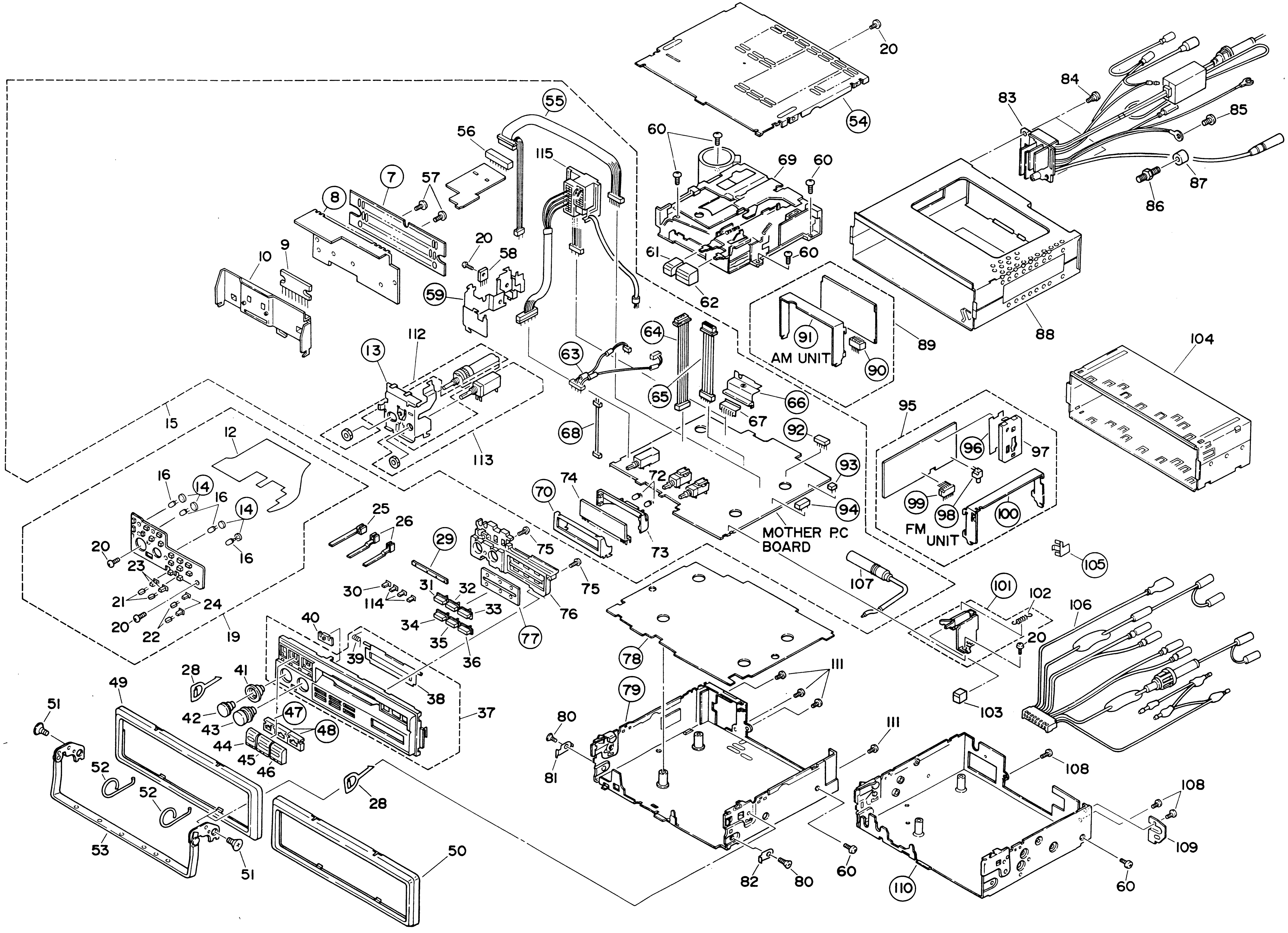

IC,Q
IC201
Q205 Q204
Q203
Q202
Q201
ADJ
T205
T206
T204
TO TUNER AMP UNIT
(MOTHER P.C.BOARD)

Fig. 31

# 21.EXPLODED VIEW



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AM UNIT
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112
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100
FM
UNIT
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113
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MOTHER P.C
BOARD
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Fig. 32

- **Parts List**

*NOTE:*

- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  *★★: GENERALLY MOVES FASTER THAN ★.*
  *This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.*
- *Parts whose parts numbers are omitted are subject to being not supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

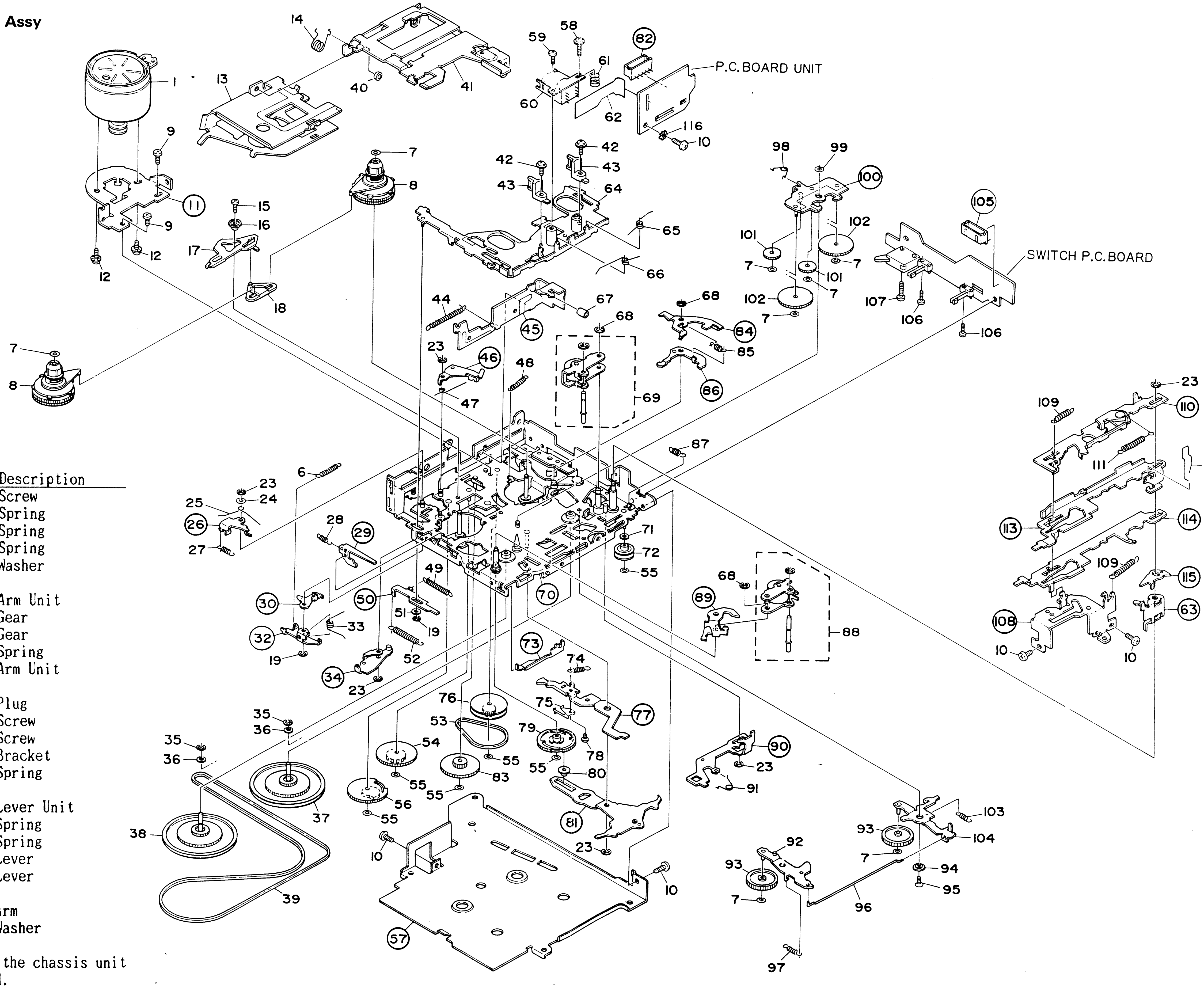
| Mark | No. | Part No. | Description |
|---|---|---|---|
| | 1-6 | ..... | |
| | 7 | | Plate(Except for 4070) |
| | 8 | | Heat Sink |
| | 9 | TA8215H | IC |
| ★★ | 10 | | Holder |
| | 11 | ..... | |
| | 12 | CNP1831 | P.C.Board |
| | 13 | | Holder |
| | 14 | | Spacer |
| ◉ | 15 | CWM1699 | Tuner Amp Unit (5090SDK) |
| ◉ | | CWM1700 | Tuner Amp Unit (5090B) |
| ◉ | | CWM1702 | Tuner Amp Unit (5070QR) |
| ◉ | | CWM1704 | Tuner Amp Unit (4090SDK) |
| ◉ | | CWM1705 | Tuner Amp Unit (4090B, 4090) |
| ◉ | | CWM1708 | Tuner Amp Unit(4070) |
| ★★ | 16 | CEL1025 | Lamp |
| | 17 | ..... | |
| | 18 | ..... | |
| ◉ | 19 | CWM1709 | Key Board Unit (5090SDK) |
| ◉ | | CWM1710 | Key Board Unit (5090B, 5070QR) |
| ◉ | | CWM1711 | Key Board Unit (4090SDK) |
| ◉ | | CWM1714 | Key Board Unit (4090B, 4090, 4070) |
| | 20 | BMZ30P060FMC | Screw |
| ★ | 21 | SLR-320PG3KL | LED(5090 Series) |
| ★ | 22 | SLR-320DU3LM | LED |
| | 23 | CNV1801 | Bush(5090 Series) |

| Mark | No. | Part No. | Description |
|---|---|---|---|
| | 24 | CNV1801 | Bush |
| | 25 | CAC1770 | Button(LOUD) (5090 Series) |
| | 26 | CAC1769 | Button(MTL, NR) (5090 Series) |
| | 27 | ..... | |
| | 28 | CNC2346 | Hook |
| | 29 | | Cushion |
| ★ | 30 | CAC1767 | Button(WG) |
| ★ | 31 | CAC1761 | Button(1) |
| ★ | 32 | CAC1762 | Button(2) |
| ★ | 33 | CAC1763 | Button(3) |
| ★ | 34 | CAC1764 | Button(4) |
| ★ | 35 | CAC1765 | Button(5) |
| ★ | 36 | CAC1766 | Button(6) |
| | 37 | CXA2320 | Grille Unit(5090SDK) |
| | | CXA2322 | Grille Unit(5090B) |
| | | CXA2324 | Grille Unit(5070QR) |
| | | CXA2325 | Grille Unit(4090SDK) |
| | | CXA2326 | Grille Unit (4090B, 4090) |
| | | CXA2328 | Grille Unit(4070) |
| | 38 | CAT1139 | Door(5090SDK, 5090B) |
| | | CAT1153 | Door(5070QR, 4070) |
| | | CAT1151 | Door(4090SDK, 4090B) |
| | 39 | CBH1129 | Spring |
| | 40 | | Escutcheon (4090 Series) |
| | 41 | CAA1144 | Knob(FAD) |
| | 42 | CAA1143 | Knob(VOLUME) |
| | 43 | CAA1145 | Knob(BASS, TRE) |
| ★ | 44 | CAC1756 | Button(BAND) (WG) |
| ★ | | CAC1758 | Button(BAND) (EW, ES) |
| ★ | 45 | CAC1759 | Button( ◁ ) |
| ★ | 46 | CAC1760 | Button( ▷ ) |

| Mark | No. | Part No. | Description |
|---|---|---|---|
| | 47 | | Cushion |
| | 48 | | Cushion |
| | 49 | CNS1591 | Panel(5090SDK, 5090B, 4090B) |
| | | CNS1421 | Panel(5070QR) |
| | 50 | CNS1403 | Panel |
| | 51 | CMZ50P080FZK | Screw(5090SDK, 5090B, 5070QR, 4090B) |
| | 52 | CBH-865 | Spring |
| | 53 | CXA2329 | Handle Unit(5090SDK, 5090B, 5070QR, 4090B) |
| | 54 | | Case Unit |
| | 55 | | Connector(10P) (WG) |
| | 56 | CKS-574 | Plug(10P) (WG) |
| | 57 | BMZ30P120FMC | Screw |
| ★★ | 58 | AN6540 | IC |
| | 59 | | Holder |
| | 60 | BMZ26P050FMC | Screw |
| ★ | 61 | CAC1778 | Button( ◁◁ ) |
| ★ | 62 | CAC1779 | Button( ▷▷ ) |
| | 63 | | Connector(4P) |
| | 64 | | Connector(5P) |
| | 65 | | Connector(5P) |
| | 66 | | Holder(4070) |
| | 67 | CKS-467 | Plug(10P) (4070) |
| | 68 | | Connector(2P) |
| ◉ | 69 | EXK1140 | Cassette Mechanism Assy |
| | 70 | | Holder |
| | 71 | ..... | |
| ★★ | 72 | CEL1025 | Lamp |
| | 73 | CNV1788 | Holder |
| | 74 | CWW1216 | LCD |
| | 75 | BPZ20P050FMC | Screw |
| | 76 | CNV1786 | Lens |
| | 77 | | Cushion |
| | 78 | | Insulator |
| | 79 | | Chassis Unit(5090SDK) |
| | | | Chassis Unit(5090B) |
| | | | Chassis Unit(5070QR) |
| | | | Chassis Unit (4090SDK, 4090B, 4090) |

| Mark | No. | Part No. | Description |
|---|---|---|---|
| | 80 | CMZ30P050FMC | Screw |
| | 81 | CNC1775 | Holder |
| | 82 | CNC1776 | Holder |
| ★ | 83 | CDE1499 | Cord Assy (Except for 4070) |
| | 84 | CBA1073 | Screw(5090SDK, 5090B, 5070QR, 4090B) |
| | 85 | BMZ40P060FMC | Screw(5090SDK, 5090B, 5070QR, 4090B) |
| | 86 | CBA1002 | Screw |
| | 87 | CNV1009 | Bush |
| | 88 | CNB1221 | Box(5090SDK, 5090B, 5070QR, 4090B) |
| ◉ | 89 | CWA1007 | AM Unit |
| | 90 | | Connctor(12P) |
| | 91 | | Holder |
| | 92 | | Plug(12P) |
| | 93 | | Plug(4P) |
| | 94 | | Plug(10P) |
| ◉ | 95 | CWE1103 | FM Unit(WG, EW) |
| ◉ | | CWE1107 | FM Unit(ES) |
| | 96 | | Insulator |
| | 97 | CWB1032 | Front End |
| | 98 | | Connctor(4P) |
| | 99 | | Connctor(10P) |
| | 100 | | Holder |
| | 101 | | Lever Unit |
| | 102 | CBH1191 | Spring |
| ★ | 103 | CAC1780 | Button( ◁ ▷ ) |
| | 104 | CNC1484 | Holder(4090SDK, 4090, 4070) |
| | 105 | | Spacer |
| ★ | 106 | CDE2088 | Cord Assy(4070) |
| | 107 | CDH1066 | Antenna Cable(4070) |
| | 108 | BMZ30P060FMC | Screw(4070) |
| | 109 | CNF-387 | Clamper(4070) |
| | 110 | | Chassis Unit(4070) |
| | 111 | BMZ30P080FMC | Screw (Except for 4070) |
| ★★ | 112 | CCS1113 | Volume |
| ★★ | 113 | CCS1114 | Volume |
| ★ | 114 | CAC1767 | Button |
| ★ | 115 | CDE1941 | Cord Assy (Except for 4070) |

**•Cassette Mechanism Assy**



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P.C. BOARD UNIT
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SWITCH P.C. BOARD
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| Mark | No. | Part No. | Description |
|---|---|---|---|
| | 95 | HBA-212 | Screw |
| | 96 | EBH1007 | Spring |
| | 97 | EBH1006 | Spring |
| | 98 | EBH1058 | Spring |
| | 99 | EBF1005 | Washer |
| | 100 | | Arm Unit |
| | 101 | ENV1018 | Gear |
| | 102 | ENV1017 | Gear |
| | 103 | EBH1022 | Spring |
| | 104 | EXA1005 | Arm Unit |
| | 105 | | Plug |
| | 106 | EBA1010 | Screw |
| | 107 | BMZ20P070FMC | Screw |
| | 108 | | Bracket |
| | 109 | EBH1016 | Spring |
| | 110 | | Lever Unit |
| | 111 | EBH1048 | Spring |
| | 112 | EBH1005 | Spring |
| | 113 | | Lever |
| | 114 | | Lever |
| | 115 | | Arm |
| | 116 | WH23FMC | Washer |

*)Number 92 is part of the chassis unit and cannot be removed.

Fig. 33

## 22.CASSETTE MECHANISM ASSY EXPLODED VIEW

- **Parts List**

| Mark | No. | Part No. | Description |
|---|---|---|---|
| ★★ | 1 | EXA1013 | Motor Unit |
|  | 2,3 | ..... |  |
|  | 4,5 | ..... |  |
|  | 6 | EBH1056 | Spring |
|  | 7 | CBF-166 | Washer |
| ★★ | 8 | EXA1012 | Reel Unit |
|  | 9 | BMZ23P030FMC | Screw |
|  | 10 | BSZ23P040FMC | Screw |
|  | 11 |  | Bracket |
|  | 12 | PMS26P025FUC | Screw |
|  | 13 | ENC1013 | Cassette Holder |
|  | 14 | EBH1019 | Spring |
|  | 15 | EBA1009 | Screw |
|  | 16 | ELA1042 | Collar |
|  | 17 | ENV1032 | Arm |
|  | 18 | ENV1031 | Arm |
|  | 19 | YE12FUC | Washer |
|  | 20-22 | ..... |  |
|  | 23 | YE15FUC | Washer |
|  | 24 | CBF-165 | Washer |
|  | 25 | EBH1049 | Spring |
|  | 26 |  | Arm |
|  | 27 | EBH1060 | Spring |
|  | 28 | EBH1066 | Spring |
|  | 29 |  | Arm |
|  | 30 |  | Arm |
|  | 31 | ..... |  |
|  | 32 |  | Arm |
|  | 33 | EBH1050 | Spring |
|  | 34 |  | Arm Unit |
|  | 35 | CBG1001 | Washer |
|  | 36 | HBF-179 | Washer |
|  | 37 | ENV1029 | Flywheel(N) |
|  | 38 | ENV1030 | Flywheel(R) |
| ★★ | 39 | ENT1003 | Belt |
|  | 40 | ELA1051 | Roller |
|  | 41 | EXA1014 | Cassette Frame Unit |
|  | 42 | PMS20P040FMC | Screw |
|  | 43 | ENV1016 | Tape Guide |
|  | 44 | EBH1047 | Spring |
|  | 45 |  | Lever |
|  | 46 |  | Arm |
|  | 47 | EBH1040 | Spring |
|  | 48 | EBH1041 | Spring |
|  | 49 | EBH1021 | Spring |

| Mark | No. | Part No. | Description |
|---|---|---|---|
|  | 50 |  | Lever |
|  | 51 | EBE1001 | Washer |
|  | 52 | EBH1009 | Spring |
| ★★ | 53 | ENT1006 | Belt |
|  | 54 | ENV1034 | Gear |
|  | 55 | CBF-135 | Washer |
|  | 56 | ENV1037 | Gear |
|  | 57 |  | Cover |
|  | 58 | EBA1013 | Screw |
|  | 59 | BMZ20P050FMC | Screw |
| ★★ | 60 | EPB1001 | Head |
|  | 61 | EBH1065 | Spring |
|  | 62 | ENP1003 | P.C.Board |
|  | 63 |  | Arm |
|  | 64 | EXA1004 | Head Base Unit |
|  | 65 | EBH1004 | Spring |
|  | 66 | EBH1003 | Spring |
|  | 67 | CNV1667 | Cushion |
|  | 68 | YE20FUC | Washer |
| ★★ | 69 | EXA1002 | Roller Unit |
|  | 70 |  | Chassis Unit |
|  | 71 | EBF1004 | Washer |
|  | 72 | ENV1009 | Pulley |
|  | 73 |  | Lever |
|  | 74 | EBH1025 | Spring |
|  | 75 | EBL1001 | Spring |
|  | 76 | ENV1010 | Pulley |
|  | 77 |  | Arm |
|  | 78 | HBA-147 | Screw |
|  | 79 | ENV1035 | Gear |
|  | 80 | ELA1018 | Collar |
|  | 81 |  | Arm |
|  | 82 |  | Plug |
|  | 83 | ENV1011 | Gear |
|  | 84 |  | Arm |
|  | 85 | EBH1024 | Spring |
|  | 86 |  | Ratchet |
|  | 87 | EBH1018 | Spring |
| ★★ | 88 | EXA1003 | Roller Unit |
|  | 89 |  | Arm |
|  | 90 |  | Lever |
|  | 91 | EBH1013 | Spring |
|  | 92 | * |  |
|  | 93 | ENV1043 | Gear |
|  | 94 | ELA1032 | Collar |

# 23.ELECTRICAL PARTS LIST

*NOTE:*

- *For your parts Stock Control, the fast moving items are indicated with the marks ⇟⇟ and ⇟.*
  *⇟⇟ : GENERALLY MOVES FASTER THAN ⇟.*
  *This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.*
- *Parts whose parts numbers are omitted are subject to being not supplied.*
- *The part numbers shown below indicate chip components.*
  *Chip Resistor*
  *RS1/8S□□□J, RS1/10S□□□J*
  *Chip Capacitor (except for CQS.....)*
  *CKS......, CCS......, CSZS.....*

Tuner Amp Unit (KEH-5090SDK)

Consists of
- ●Mother P.C.Board
- ●SDK P.C.Board

Unit Number :
Unit Name : Tuner Amp Unit

MISCELLANEOUS

| Mark | Circuit Symbol & No. | Part Name | Part No. |
|---|---|---|---|
| ⇟⇟ | IC 251 | | M51522AL |
| ⇟⇟ | IC 301 | | CXA1102P |
| ⇟⇟ | IC 451 601 | | TA75558S |
| ⇟⇟ | IC 501 | | PD4163 |
| ⇟⇟ | IC 551 | | TA8215H |
| ⇟⇟ | IC 701 | (WG) | KHA142 |
| ⇟⇟ | IC 702 | (WG) | TA75558S |
| ⇟⇟ | IC 801 | | AN6540 |
| ⇟⇟ | Q 251 252 | | 2SC2458<br>(2SC1740S) |
| ⇟⇟ | Q 253 806 807 | | 2SD1919 |
| ⇟⇟ | Q 501 | | 2SC2498 |
| ⇟⇟ | Q 502 | | 2SC4038 |
| ⇟⇟ | Q 503 508 512 | | DTC144ES |
| ⇟⇟ | Q 504 | (EW ES) | DTC144EL |
| ⇟⇟ | Q 505 | (WG EW) | DTC144ES |
| ⇟⇟ | Q 506 | | 2SK330 |
| ⇟⇟ | Q 507 802 803 804 805 809 | | 2SC2458<br>(2SC1740S) |
| ⇟⇟ | Q 509 510 | | 2SA1150 |
| ⇟⇟ | Q 511 513 | | 2SC3113 |
| ⇟⇟ | Q 701 702 703 704 | (WG) | 2SC2458<br>(2SC1740S) |
| ⇟⇟ | Q 801 808 | | 2SA1048 |
| ⇟⇟ | Q 810 811 | | 2SD1468S |
| ⇟⇟ | Q 815 816 | | DTC314TS |
| ⇟⇟ | Q 817 | (WG) | 2SD1864 |
| ⇟ | D 251 | | 1SS133 |
| ⇟ | D 252 | | HZS9R1EB2<br>(RD9R1ESB2) |
| ⇟ | D 501 | | 1SS135 |
| ⇟ | D 502 503 601 602 603 604 | | 1SS133 |
| ⇟ | D 504 | | HZS3R0EB2<br>(RD3R0ESB2) |
| ⇟ | D 506 | (ES) | 1SS133 |
| ⇟ | D 507 508 509 510 | | 1S1555 |
| ⇟ | D 540 | Chip Diode | MA78-TR |
| ⇟ | D 605 | | 1S1555 |
| ⇟ | D 606 | | 1SS133 |
| ⇟ | D 701 702 | (WG) | 1SS133 |
| ⇟ | D 802 | | HZS5R1EB2<br>(RD5R1ESB2) |
| ⇟ | D 803 | | HZS7R5EB2<br>(RD7R5ESB2) |
| ⇟ | D 804 | | MA700 |
| ⇟ | D 805 | | HZS5R6JB2<br>(RD5R6JSB2) |
| ⇟ | D 806 810 811 | | 1SS133 |
| ⇟ | D 807 | | HZS8R2JB2<br>(RD8R2JSB2) |
| ⇟ | D 809 | | HZS9R1EB2<br>(RD9R1ESB2) |
| ⇟ | D 814 | | SM-3-02 |
| ⇟ | D 816 | | 1S1555 |
| | L 501 | Ferri-Inductor | CTF-157 |
| | L 502 | Ferri-Inductor | CTF1042 |
| | L 801 802 | EMI Filter | CCG1003 |
| | X 501 | Cristal Resonator | CSS1011 |
| | X 701 | (WG) Ceramic Resonator | CSS1019 |
| ⇟⇟ | S 251 301 | Switch | CSG-207 |
| ⇟⇟ | S 451 | Switch | CSG-207 |
| ⇟⇟ | IL 501 502 | Lamp 14V 40mA | CEL1025 |
| ⇟⇟ | VR 301 302 | Semi-fixed 33kΩ(B) | VRTB6VS333 |
| ⇟⇟ | VR 451 | Volume 20kΩ(B)×4 | CCS1114 |
| ⇟⇟ | VR 454/S801 | Volume/Switch 200Ω×2<br>50kΩ(W)×1 20kΩ(B)×2 | CCS1113 |
| | CG501 | | DSP-201M-BF |
| | | LCD | CAW1216 |

RESISTORS

| Mark | Circuit Symbol & No. | Part Name | Part No. |
|---|---|---|---|
| | R 251 | | RS1/10S222J |
| | R 252 | | RS1/8S222J |
| | R 253 254 | | RS1/10S181J |
| | R 255 256 | | RS1/10S133J |
| | R 257 258 | | RS1/10S334J |
| | R 259 260 | | RS1/10S222J |
| | R 261 262 | | RS1/10S104J |
| | R 263 264 | | RS1/10S332J |
| | R 265 | | RS1/10S102J |
| | R 266 | | RS1/8S473J |
| | R 267 | | RD1/4PS681JL |
| | R 268 | | RS1/10S471J |
| | R 269 | | RD1/4PS101JL |
| | R 303 304 | | RS1/10S103J |
| | R 305 | | RS1/8S433J |
| | R 306 | | RS1/8S273J |
| | R 307 | | RS1/10S273J |
| | R 453 454 455 456 | | RS1/10S332J |
| | R 457 458 459 | | RD1/4PS153JL |
| | R 460 | | RS1/10S153J |
| | R 463 | | RD1/4PS103JL |
| | R 464 | | RS1/10S223J |
| | R 465 466 | | RS1/10S102J |
| | R 467 468 | | RD1/4PS222JL |
| | R 469 470 (WG) | | RS1/8S222J |
| | R 469 470 (EW ES) | | RS1/8S0R0J |
| | R 471 (WG) | | RD1/4PS271JL |
| | R 472 473 (WG) | | RD1/4PS103JL |
| | R 474 (WG) | | RD1/4PS1R8JL |
| | R 477 478 902 | | RS1/8S0R0J |
| | R 501 | | RS1/10S102J |
| | R 502 | | RS1/10S182J |
| | R 503 | | RS1/10S821J |
| | R 504 505 | | RS1/10S101J |
| | R 506 | | RD1/4PS331JL |
| | R 507 802 | | RS1/10S472J |
| | R 508 | | RD1/4PS472JL |
| | R 509 514 515 (WG) | | RD1/4PS473JL |
| | R 510 | | RD1/4PS473JL |
| | R 511 | | RD1/4PS393JL |
| | R 512 | | RS1/10S473J |
| | R 513 | | RS1/8S473J |
| | R 516 517 | | RS1/10S222J |
| | R 518 520 | | RS1/10S102J |
| | R 519 522 532 804 | | RD1/4PS472JL |
| | R 521 | | RS1/10S152J |
| | R 523 530 | | RD1/4PS223JL |
| | R 524 531 | | RS1/10S222J |
| | R 525 | | RS1/10S104J |
| | R 526 | | RD1/4PS222JL |
| | R 527 | | RD1/4PS102JL |
| | R 528 | | RS1/8S221J |
| | R 529 803 807 | | RD1/4PS103JL |
| | R 533 | | RD1/4PS104JL |
| | R 534 | | RS1/8S222J |
| | R 535 | | RD1/4PS473JL |
| | R 551 552 | | RS1/10S102J |
| | R 553 554 | | RS1/10S473J |
| | R 555 556 (WG) | | RS1/10S331J |
| | R 555 556 (EW ES) | | RS1/10S471J |

| Mark | Circuit Symbol & No. | Part Name | Part No. |
|---|---|---|---|
| | R 557 558 559 560 | | RD1/4PS4R7JL |
| | R 601 602 | | RS1/10S473J |
| | R 603 604 | | RD1/4PS473JL |
| | R 605 606 (WG) | | RS1/10S124J |
| | R 605 606 (EW ES) | | RS1/10S104J |
| | R 608 610 | | RD1/4PS273JL |
| | R 611 | | RS1/8S682J |
| | R 612 | | RD1/4PS682JL |
| | R 701 (WG) | | RD1/4PS473JL |
| | R 702 (WG) | | RD1/4PS222JL |
| | R 703 704 (WG) | | RD1/4PS472JL |
| | R 705 (WG) | | RD1/4PS273JL |
| | R 706 709 (WG) | | RD1/4PS222JL |
| | R 707 708 714 (WG) | | RD1/4PS104JL |
| | R 710 (WG) | | RD1/4PS563JL |
| | R 711 (WG) | | RD1/4PS333JL |
| | R 712 (WG) | | RD1/4PS223JL |
| | R 713 (WG) | | RD1/4PS473JL |
| | R 715 (WG) | | RS1/8S221J |
| | R 716 (WG) | | RD1/4PS102JL |
| | R 717 (WG) | | RD1/4PS122JL |
| | R 718 (WG) | | RS1/10S473J |
| | R 719 (WG) | | RS1/10S393J |
| | R 801 805 | | RS1/10S103J |
| | R 806 | | RS1/10S331J |
| | R 808 | | RD1/4PS101JL |
| | R 809 823 | | RD1/4PS102JL |
| | R 810 812 819 | | RD1/4PS103JL |
| | R 811 | | RD1/4PS122JL |
| | R 813 | | RD1/4PS104JL |
| | R 814 | | RS1/8S102J |
| | R 815 | | RD1/4PS561JL |
| | R 816 | | RD1/4PS472JL |
| | R 817 | | RD1/4PS471JL |
| | R 818 821 822 | | RD1/4PS223JL |
| | R 820 | | RD1/4PS473JL |
| | R 824 | | RS1/8S473J |
| | R 825 826 | | RD1/4PS821JL |
| | R 827 | | RD1/4PS821JL |
| | R 829 | | RD1/4PS103JL |
| | R 830 (WG) | | RS1/10S471J |
| | R 833 834 | | RS1/8S272J |
| | R 901 | | RS1/10S0R0J |

CAPACITORS

| Mark | Circuit Symbol & No. | Part Name | Part No. |
|---|---|---|---|
| | C 251 252 | | CKSQYB471K50 |
| | C 253 254 | | CEA470M16LS |
| | C 255 256 | | CEANL4R7M35LL |
| | C 257 258 | | CKSQYB103K50 |
| | C 259 260 | | CKSQYB223K50 |
| | C 261 | | CEA101M10LS |
| | C 262 | | CEA220M16LS |
| | C 263 | | CEA220M16LS |
| | C 264 | | CKSQYF473Z50 |
| | C 265 | | CKSYF473Z50 |
| | C 301 302 | | CEA010M50LS2 |
| | C 305 | | CEA470M16LS |
| | C 306 | | CEA101M10LL |
| | C 308 309 | | CEAR68M50LS2 |
| | C 453 454 | | CKSQYB332K50 |

| Mark | Circuit Symbol & No. | Part Name | Part No. |
|---|---|---|---|
| | C 457 458 | | CKSQYF333Z50 |
| | C 459 460 | (WG) | CCSQCH470J50 |
| | C 459 460 | (EW ES) | CCSQCH330J50 |
| | C 461 462 | | CEA4R7M35LS |
| | C 463 464 | | CKSQYB272K50 |
| | C 465 466 | | CEAR33M50LS2 |
| | C 471 | | CEA100M16LS2 |
| | C 501 | | CKSQYB561K50 |
| | C 502 508 512 517 518 | | CKSQYB103K50 |
| | C 503 504 | | CCSQCH101J50 |
| | C 505 516 | | CKSYB103K50 |
| | C 506 | | CCSQCH090D50 |
| | C 507 | | CCSCH090D50 |
| | C 509 514 | | CKPYY103M16L |
| | C 510 | | CKSQYF473Z50 |
| | C 511 | (WG EW) | CEAR47M50LS2 |
| | C 513 | 4.7μF/16V | CCH1005 |
| | C 540 | (EW) | CKSYF223Z50 |
| | C 541 | | CKQYF473Z50 |
| | C 551 552 | | CEHAQ4R7M50 |
| | C 553 | | CKSQYB102K50 |
| | C 554 | | CKSYB102K50 |
| | C 556 | | CEHAQ101M16 |
| | C 557 558 | | CEHAQ470M25 |
| | C 559 560 561 562 | | CQEA224J63 |
| | C 601 602 | | CEALNP4R7M16 |
| | C 603 604 | (WG) | CCSQCH470J50 |
| | C 603 604 | (EW ES) | CCSQCH560J50 |
| | C 605 606 | | CEA100M16LS2 |
| | C 701 823 | (WG) | CEA220M16LS |
| | C 702 | (WG) | CKSQYB103K50 |
| | C 703 | (WG) | CEAR33M50L2 |
| | C 704 | (WG) | CQMA683J50LL |
| | C 705 717 | (WG) | CEA470M16L2 |
| | C 706 713 | (WG) | CEA4R7M25L2 |
| | C 707 | (WG) | CKSQYF333Z50 |
| | C 708 | (WG) | CKSQYB102K50 |
| | C 709 | (WG) | CEA220M16L2 |
| | C 710 | (WG) | CCSQCH471J50 |
| | C 711 | (WG) | CEA4R7M35LS |
| | C 712 | (WG) | CEAR47M50L2 |
| | C 714 | (WG) | CKSQYB223K50 |
| | C 715 | (WG) | CCSQCH471J50 |
| | C 716 | (WG) | CEA221M10L2 |
| | C 777 | (WG) | CKSYF473Z50 |
| | C 801 | | CEA221M10L2 |
| | C 802 | | CEA010M50L2 |
| | C 803 | | CKSYF473Z50 |
| | C 804 | | CKSYF473Z50 |
| | C 806 | | CEA470M16LS |
| | C 807 | | CEA100M16LS2 |
| | C 808 811 | | CEA101M16L2 |
| | C 809 | | CEHAQ220M50 |
| | C 810 | | CEA470M16L2 |
| | C 812 | | CEA220M16L2 |
| | C 813 | | CEA4R7M35LS |
| | C 814 | | CEA100M16LS2 |
| | C 815 | | CEA010M50LS2 |
| | C 816 817 | | CKSQYF104Z25 |
| | C 821 | | CEHAQ472M16 |
| | C 824 | | CEA100M16LS2 |

Tuner Amp Unit (KEH-4090SDK)

Consists of
- ●Mother P.C.Board
- ●SDK P.C.Board

Unit Number :
Unit Name : Tuner Amp Unit

MISCELLANEOUS

| Mark | Circuit Symbol & No. | Part Name | Part No. |
|---|---|---|---|
| ‡‡ | IC 251 | | M51522AL |
| ‡‡ | IC 451 601 | | TA75558S |
| ‡‡ | IC 501 | | PD4163 |
| ‡‡ | IC 551 | | TA8215H |
| ‡‡ | IC 701 | (WG) | KHA142 |
| ‡‡ | IC 702 | (WG) | TA75558S |
| ‡‡ | IC 801 | | AN6540 |
| ‡‡ | Q 253 806 807 | | 2SD1919 |
| ‡‡ | Q 501 | | 2SC2498 |
| ‡‡ | Q 502 | | 2SC4038 |
| ‡‡ | Q 503 508 512 | | DTC144ES |
| ‡‡ | Q 504 | (EW ES) | DTC144EL |
| ‡‡ | Q 505 | (WG EW) | DTC144ES |
| ‡‡ | Q 506 | | 2SK330 |
| ‡‡ | Q 507 802 803 804 805 809 | | 2SC2458<br>(2SC1740S) |
| ‡‡ | Q 509 510 | | 2SA1150 |
| ‡‡ | Q 511 513 | | 2SC3113 |
| ‡‡ | Q 701 702 703 704 | (WG) | 2SC2458<br>(2SC1740S) |
| ‡‡ | Q 801 808 | | 2SA1048 |
| ‡‡ | Q 810 811 | | 2SD1468S |
| ‡‡ | Q 815 816 | | DTC314TS |
| ‡‡ | Q 817 | (WG) | 2SD1864 |
| ‡ | D 251 | | 1SS133 |
| ‡ | D 252 | | HZS9R1EB2<br>(RD9R1ESB2) |
| ‡ | D 501 | | 1SS135 |
| ‡ | D 502 503 601 602 603 604 | | 1SS133 |
| ‡ | D 504 | | HZS3R0EB2<br>(RD3R0ESB2) |
| ‡ | D 506 | (ES) | 1SS133 |
| ‡ | D 507 508 509 510 | | 1S1555 |
| ‡ | D 540 | Chip Diode | MA78-TR |
| ‡ | D 605 | | 1S1555 |
| ‡ | D 606 | | 1SS133 |
| ‡ | D 701 702 | (WG) | 1SS133 |
| ‡ | D 802 | | HZS5R1EB2<br>(RD5R1ESB2) |
| ‡ | D 803 | | HZS7R5EB2<br>(RD7R5ESB2) |
| ‡ | D 804 | (WG EW) | MA700 |
| ‡ | D 805 | | HZS5R6JB2<br>(RD5R6JSB2) |
| ‡ | D 806 810 811 | | 1SS133 |
| ‡ | D 807 | | HZS8R2JB2<br>(RD8R2JSB2) |
| ‡ | D 809 | | HZS9R1EB2<br>(RD9R1ESB2) |
| ‡ | D 813 | (ES) | 1S1555 |

## CAPACITORS

| Mark | Circuit Symbol & No. | Part Name | Part No. |
|---|---|---|---|
| | C 251 252 | | CKSQYB471K50 |
| | C 253 254 | | CEA470M16LS |
| | C 255 256 | | CEANL4R7M35LL |
| | C 257 258 | | CKSQYB103K50 |
| | C 261 | | CEA101M10LS |
| | C 263 | | CEA220M16LS |
| | C 264 | | CKSQYF473Z50 |
| | C 453 454 | | CKSQYB332K50 |
| | C 457 458 | | CKSQYF333Z50 |
| | C 459 460 | (WG) | CCSQCH470J50 |
| | C 459 460 | (EW ES) | CCSQCH330J50 |
| | C 461 462 | | CEA4R7M35LS |
| | C 465 466 | | CEAR33M50LS2 |
| | C 471 | | CEA100M16LS2 |
| | C 501 | | CKSQYB561K50 |
| | C 502 508 512 517 518 | | CKSQYB103K50 |
| | C 503 504 | | CCSQCH101J50 |
| | C 505 516 | | CKSYB103K50 |
| | C 506 | | CCSQCH090D50 |
| | C 507 | | CCSCH090D50 |
| | C 509 514 | | CKPYY103M16L |
| | C 510 | | CKSQYF473Z50 |
| | C 511 | (WG EW) | CEAR47M50LS2 |
| | C 513 | 4.7μF/16V | CCH1005 |
| | C 540 | (EW) | CKSYF223Z50 |
| | C 541 | | CCSQYF473Z50 |
| | C 551 552 | | CEHAQ4R7M50 |
| | C 553 | | CKSQYB102K50 |
| | C 554 | | CKSYB102K50 |
| | C 556 | | CEHAQ101M16 |
| | C 557 558 | | CEHAQ470M25 |
| | C 559 560 561 562 | | CQEA224J63 |
| | C 601 602 | | CEALNP4R7M16 |
| | C 603 604 | (WG) | CCSQCH470J50 |
| | C 603 604 | (EW ES) | CCSQCH560J50 |
| | C 701 823 | (WG) | CEA220M16LS |
| | C 702 | (WG) | CKSQYB103K50 |
| | C 703 | (WG) | CEAR33M50L2 |
| | C 704 | (WG) | CQMA683J50LL |
| | C 705 717 | (WG) | CEA470M16L2 |
| | C 706 713 | (WG) | CEA4R7M25L2 |
| | C 707 | (WG) | CKSQYF333Z50 |
| | C 708 | (WG) | CKSQYB102K50 |
| | C 709 | (WG) | CEA220M16L2 |
| | C 710 | (WG) | CCSQCH471J50 |
| | C 711 | (WG) | CEA4R7M35LS |
| | C 712 | (WG) | CEAR47M50L2 |
| | C 714 | (WG) | CKSQYB223K50 |
| | C 715 | (WG) | CCSQCH471J50 |
| | C 716 | (WG) | CEA221M10L2 |
| | C 777 | (WG) | CKSYF473Z50 |
| | C 801 | | CEA221M10L2 |
| | C 802 | | CEA010M50L2 |
| | C 803 | | CKSYF473Z50 |
| | C 804 | | CKSYF473Z50 |
| | C 805 | (ES) | CCH1013 |
| | C 806 | (WG EW) | CEA470M16LS |
| | C 807 | | CEA100M16LS2 |
| | C 808 811 | | CEA101M16L2 |
| | C 809 | | CEHAQ220M50 |
| | C 810 | | CEA470M16L2 |
| | C 812 | | CEA220M16L2 |
| | C 813 | | CEA4R7M35LS |
| | C 814 | | CEA100M16LS2 |
| | C 815 | | CEA010M50LS2 |
| | C 816 817 | | CKSQYF104Z25 |
| | C 821 | | CEHAQ472M16 |
| | C 822 | (ES) | CEA101M16L2 |
| | C 824 | | CEA100M16LS2 |

Unit Number :
Unit Name : AM UNIT

## MISCELLANEOUS

| Mark | Circuit Symbol & No. | Part Name | Part No. |
|---|---|---|---|
| ** | IC 201 | | PA4010 |
| ** | Q 201 | | 2SK435 |
| ** | Q 202 | | 2SC2458 |
| ** | Q 203 204 205 | | DTC124ES |
| * | D 201 202 | | 1S2473VH |
| * | D 203 | Variable Capacitance Diode | SVC203-AB |
| * | D 204 205 | | 1SS133 |
| | L 201 | Ferri-Inductor | CTF1026 |
| | L 202 | Ferri-Inductor | LAU220K |
| | L 203 | Ferri-Inductor | LAU470K |
| | L 204 | Ferri-Inductor | LAU4R7K |
| | T 201 | Coil | CTB1020 |
| | T 202 | Coil | CTB1004 |
| | T 203 | Coil | CTB1022<br>(CTB1021) |
| | T 204 | Coil | CTE1013<br>(CTE1006) |
| | T 205 | Coil | CTE1014<br>(CTE1007) |
| | T 206 | Coil | CTE1015<br>(CTE1008) |
| | CF 201 | Filter | CTF1027<br>(CTF1041) |
| | CF 202 | Filter | CTF-100 |
| | X 201 | Cristal Resonator | CSS1014 |

## RESISTORS

| Mark | Circuit Symbol & No. | Part Name | Part No. |
|---|---|---|---|
| | R 201 | | RS 1/10S220J |
| | R 202 | | RS 1/10S681J |
| | R 203 206 | | RS 1/10S222J |
| | R 204 | | RS 1/10S473J |
| | R 205 | | RS 1/10S470J |
| | R 207 | | RS 1/10S822J |
| | R 208 211 | | RS 1/10S103J |
| | R 209 | | RD 1/4PS470JL |
| | R 210 | | RS 1/10S682J |
| | R 212 | | RS 1/8S223J |
| | R 213 | | RD 1/4PS222JL |

| Mark | Circuit Symbol & No. | Part Name | Part No. |
|---|---|---|---|
| ‡ | D 814 | | SM-3-02 |
| ‡ | D 816 | | 1S1555 |
| | L 501 | Ferri-Inductor | CTF-157 |
| | L 502 | Ferri-Inductor | CTF1042 |
| | L 801 802 | EMI Filter | CCG1003 |
| | L 803 | (ES) EMI Filter | CCG1003 |
| | X 501 | Cristal Resonator | CSS1011 |
| | X 701 | (WG) Ceramic Resonator | CSS1019 |
| ‡‡ | IL 501 502 | Lamp 14V 40mA | CEL1025 |
| ‡‡ | VR 451 | Volume 20kΩ(B)×4 | CCS1114 |
| ‡‡ | VR 454/S801 | Volume/Switch 200Ω×2<br>50kΩ(W)×1 20kΩ(B)×2 | CCS1113 |
| | CG501 | | DSP-201M-BF |
| | | LCD | CWW1216 |

RESISTORS

| Mark | Circuit Symbol & No. | Part Name | Part No. |
|---|---|---|---|
| | R 251 | | RS1/10S222J |
| | R 252 | | RS1/8S222J |
| | R 253 254 | | RS1/10S151J |
| | R 255 256 | | RS1/10S133J |
| | R 257 258 | | RS1/10S334J |
| | R 259 260 | | RS1/10S222J |
| | R 267 | | RD1/4PS681JL |
| | R 268 | | RS1/10S471J |
| | R 306 | | RS1/8S0R0J |
| | R 307 | | RS1/10S0R0J |
| | R 453 454 455 456 | | RS1/10S332J |
| | R 457 458 459 | | RD1/4PS153JL |
| | R 460 | | RS1/10S153J |
| | R 463 | | RD1/4PS103JL |
| | R 464 | | RS1/10S223J |
| | R 465 466 | | RS1/10S102J |
| | R 467 468 | | RD1/4PS222JL |
| | R 469 470 | (WG) | RS1/8S222J |
| | R 469 470 | (EW ES) | RS1/8S0R0J |
| | R 471 | (WG) | RD1/4PS271JL |
| | R 472 473 | (WG) | RD1/4PS103JL |
| | R 474 | (WG) | RD1/4PS1R8JL |
| | R 477 478 902 | | RS1/8S0R0J |
| | R 501 | | RS1/10S102J |
| | R 502 | | RS1/10S182J |
| | R 503 | | RS1/10S821J |
| | R 504 505 | | RS1/10S101J |
| | R 506 | | RD1/4PS331JL |
| | R 507 802 | | RS1/10S472J |
| | R 508 | | RD1/4PS472JL |
| | R 509 514 515 | (WG) | RD1/4PS473JL |
| | R 510 | | RD1/4PS473JL |
| | R 511 | | RD1/4PS393JL |
| | R 512 | | RS1/10S473J |
| | R 513 | | RS1/8S473J |
| | R 516 517 | | RS1/10S222J |
| | R 518 520 | | RS1/10S102J |
| | R 519 522 532 804 | | RD1/4PS472JL |
| | R 521 | | RS1/10S152J |
| | R 523 530 | | RD1/4PS223JL |
| | R 524 531 | | RS1/10S222J |
| | R 525 | | RS1/10S104J |
| | R 526 | | RD1/4PS222JL |
| | R 527 | | RD1/4PS102JL |
| | R 528 | | RS1/8S221J |
| | R 529 803 807 | | RD1/4PS103JL |
| | R 533 | | RD1/4PS104JL |
| | R 534 | | RS1/8S222J |
| | R 535 | | RD1/4PS473JL |
| | R 551 552 | | RS1/10S102J |
| | R 553 554 | | RS1/10S473J |
| | R 555 556 | (WG) | RS1/10S331J |
| | R 555 556 | (EW ES) | RS1/10S471J |
| | R 557 558 559 560 | | RD1/4PS4R7JL |
| | R 601 602 | | RS1/10S473J |
| | R 603 604 | | RD1/4PS473JL |
| | R 605 606 | (WG) | RS1/10S124J |
| | R 605 606 | (EW ES) | RS1/10S104J |
| | R 608 610 | | RD1/4PS273JL |
| | R 612 | (WG) | RD1/4PS223JL |
| | R 701 | (WG) | RD1/4PS473JL |
| | R 702 | (WG) | RD1/4PS222JL |
| | R 703 704 | (WG) | RD1/4PS472JL |
| | R 705 | (WG) | RD1/4PS273JL |
| | R 706 709 | (WG) | RD1/4PS222JL |
| | R 707 708 714 | (WG) | RD1/4PS104JL |
| | R 710 | (WG) | RD1/4PS563JL |
| | R 711 | (WG) | RD1/4PS333JL |
| | R 712 | (WG) | RD1/4PS223JL |
| | R 713 | (WG) | RD1/4PS473JL |
| | R 715 | (WG) | RS1/8S221J |
| | R 716 | (WG) | RD1/4PS102JL |
| | R 717 | (WG) | RD1/4PS122JL |
| | R 718 | (WG) | RS1/10S473J |
| | R 719 | (WG) | RS1/10S393J |
| | R 801 805 | | RS1/10S103J |
| | R 806 | | RS1/10S331J |
| | R 808 | | RD1/4PS101JL |
| | R 809 823 | | RD1/4PS102JL |
| | R 810 812 819 | | RD1/4PS103JL |
| | R 811 | | RD1/4PS122JL |
| | R 813 | | RD1/4PS104JL |
| | R 814 | | RS1/8S102J |
| | R 815 | | RD1/4PS561JL |
| | R 816 | | RD1/4PS472JL |
| | R 817 | | RD1/4PS471JL |
| | R 818 821 822 | | RD1/4PS223JL |
| | R 820 | | RD1/4PS473JL |
| | R 824 | | RS1/8S473J |
| | R 827 | | RD1/4PS821JL |
| | R 829 | | RD1/4PS103JL |
| | R 830 | (WG) | RS1/10S471J |
| | R 833 834 | | RS1/8S272J |
| | R 901 | | RS1/10S0R0J |

### CAPACITORS

| Mark | Circuit Symbol & No. | Part Name | Part No. |
|---|---|---|---|
| | C 201 209 223 228 | | CKSQYB103K50 |
| | C 202 212 | | CKSQYB332K50 |
| | C 203 215 216 219 226 | | CKSQYF473Z50 |
| | C 204 208 210 | | CKSQYB223K50 |
| | C 206 207 | | CCSQCH820J50 |
| | C 211 | | CEA010M50 |
| | C 213 | | CCSQCH470J50 |
| | C 218 | | CEA2R2M35NPLL |
| | C 220 | | CCSQCH430J50 |
| | C 221 | | CCSQCH100D50 |
| | C 222 | | CSZA010K25 |
| | C 224 | | CEA470M16LL |
| | C 225 | | CKSQYB333K25 |
| | C 227 | | CEA4R7M35LL |
| | C 229 | | CEA470M16LL |
| | C 230 | | CEA220M6R3LL |
| | C 232 | | CCSQCH220J50 |

Unit Number :
Unit Name : FM UNIT

### MISCELLANEOUS

| Mark | Circuit Symbol & No. | Part Name | Part No. |
|---|---|---|---|
| ‡‡ | IC 51 | | LA1140B |
| ‡‡ | IC 101 | | LA2110 |
| ‡‡ | IC 151 | | LA3430P |
| ‡‡ | Q 1 | Chip Transistor | 2SA1162<br>(2SA1179) |
| ‡‡ | Q 2 | Chip Transistor | DTC124EK |
| ‡‡ | Q 51 | Chip Transistor | 2SC2712<br>(2SD601) |
| ‡‡ | Q 71 | Chip Transistor | 2SJ106 |
| ‡ | D 1 151 | | 1S2473VH |
| | L 1 51 | Inductor | LAU150K |
| | T 51 | Coil | CTC1029 |
| | CF 51 52 | Ceramic Filter | CTF-182 |
| | CR 101 | | CWW-107 |
| | X 151 | Ceramic Resonator | CSS1028<br>(CSS1022) |
| ‡‡ | VR 1 | Semi-fixed 10kΩ(B) | VRTB6VS103 |
| ‡‡ | VR 51 | Semi-fixed 150kΩ(B) | VRTB6VS154 |
| ‡‡ | VR 152 | Semi-fixed 15kΩ(B) | VRTB6VS153 |
| | | Front End Unit | CWB1032 |

### RESISTORS

| Mark | Circuit Symbol & No. | Part Name | Part No. |
|---|---|---|---|
| | R 2 7 152 | | RS1/10S223J |
| | R 4 58 104 | | RS1/10S682J |
| | R 5 | | RS1/10S471J |
| | R 6 | | RS1/10S681J |
| | R 8 | | RS1/10S102J |
| | R 21 | | RS1/8S0R0J |
| | R 51 | | RS1/10S0R0J |
| | R 52 | | RS1/10S331J |
| | R 53 159 | | RS1/10S473J |
| | R 54 | | RS1/8S103J |

| Mark | Circuit Symbol & No. | Part Name | Part No. |
|---|---|---|---|
| | R 55 60 | | RS1/10S153J |
| | R 56 | | RS1/10S123J |
| | R 57 | | RS1/8S473J |
| | R 59 | | RD1/4PS183JL |
| | R 61 62 153 | | RS1/10S472J |
| | R 71 | | RS1/10S474J |
| | R 101 | | RS1/10S332J |
| | R 102 | | RS1/10S392J |
| | R 103 | | RS1/10S333J |
| | R 106 151 | | RS1/10S222J |
| | R 156 157 | (WG EW) | RS1/10S332J |
| | R 156 157 | (ES) | RS1/10S202J |
| | R 158 | | RS1/10S334J |

### CAPACITORS

| Mark | Circuit Symbol & No. | Part Name | Part No. |
|---|---|---|---|
| | C 1 | | CKSYB102K50 |
| | C 2 3 101 102 | | CKSQYB103K25 |
| | C 4 51 52 53 54 59 151 | | CKSQYF473Z50 |
| | C 55 62 | | CCSQSL330J50 |
| | C 56 63 | | CEAR47M50LS2 |
| | C 57 | | CKSYF104Z25 |
| | C 58 156 | | CEA010M50LS2 |
| | C 60 | | CCSQSL101J50 |
| | C 61 | | CEA4R7M16NPLL |
| | C 70 | | CCSQCH200J50 |
| | C 103 | | CEA150M16LS |
| | C 104 | | CKSQYB182K50 |
| | C 105 | | CEA470M16LS |
| | C 152 | | CKSQYB332K50 |
| | C 153 | | CKSQYB223K25 |
| | C 154 | | CKSQYB153K25 |
| | C 155 | | CEA3R3M50LS |
| | C 157 | | CS2AR22M35 |
| | C 158 | (WG) | CCSQSL681J50 |
| | C 159 160 | (WG EW) | CKSYB183K25 |
| | C 159 160 | (ES) | CKSYB273K25 |
| | C 161 | | CEA1O1M10LS |

Unit Number :
Unit Name : Key Board Unit

### MISCELLANEOUS

| Mark | Circuit Symbol & No. | Part Name | Part No. |
|---|---|---|---|
| ‡ | D 901 902 | LED | SLR-320DU3LM |
| ‡ | D 903 904 | LED(5090 Series) | SLR-320PG3KL |
| ‡‡ | SW 901 902 903 904 905 906 907 908 909 910 912 913 | Switch | CSG-253<br>(CSG1021) |
| ‡‡ | SW 911 | Switch(WG) | CSG-253<br>(CSG1021) |
| ‡‡ | IL 901 902 903 904 | Lamp 14V 40mA | CEL1025 |

Unit Number :
Unit Name : Switch P.C.Board

| Mark | Circuit Symbol & No. | Part Name | Part No. |
|---|---|---|---|
| ## | S 1 2 | Switch(Mute & Motor) | ESN1001 |
| ## | S 3 | Switch(Tape/Tuner) | HSK-126 |

Unit Number :
Unit Name : P.C.Board Unit

| Mark | Circuit Symbol & No. | Part Name | Part No. |
|---|---|---|---|
| ## | S 1 | Switch(FWD/REV) | ESH1001 |

Miscellaneous Parts List

| Mark | Circuit Symbol & No. | Part Name | Part No. |
|---|---|---|---|
| ## | HD 1 | Head | EPB1001 |
| ## | M 1 | Motor Unit | EXA1013 |
| ## | B 501 | Battery(5090SDK 5090B 5070QR 4090B 4090SDK 4090) | CEX1005<br>(CEX1008) |

PIONEER

# Service Manual

**ORDER NO.
CRT 1094**

## CASSETTE MECHANISM ASSEMBLY
# CX-166

- This service manual is for cassette mechanism assembly used in car stereo components.
- Refer to the service manual for individual models for details on sections other than the cassette mechanism assembly.

| | Model | Service Manual | Model | Service Manual |
|---|---|---|---|---|
| With music search | KE-3050/ES | CRT1088 | | |
| | KE-3080/EW | | | |
| | KE-3080SDK/WG | | | |
| | KE-3050QR/UC | CRT1089 | | |

| | Model | Service manual | Model | Service Manual |
|---|---|---|---|---|
| Without music search | KP-3120/EW, ES | CRT1085 | KP-4440/UC, ES | CRT1092 |
| | KP-3130/EW | | KP-5011/US | |
| | KP-3120SDK/WG | | KP-5550/UC, ES | |
| | KPH-4120/EW, ES | CRT1086 | | |
| | KPH-4130/EW | | | |
| | KPH-4120SDK/WG | | | |
| | KE-3020/ES | CRT1087 | | |
| | KE-3030/EW | | | |
| | KE-3030SDK/WG | | | |
| | KE-2222/UC, ES | CRT1090 | | |
| | KE-2515/US | | | |
| | KE-3011/US | | | |
| | KE-3232/UC, ES | | | |

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2. MECHANISM DESCRIPTION .......... 3
3. ADJUSTMENT .......... 11
4. CIRCUIT DIAGRAM & PATTERNS .......... 13

**PIONEER ELECTRONIC CORPORATION** 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
**PIONEER ELECTRONICS SERVICE INC.** P.O. Box 1760, Long Beach, California 90801 U.S.A. TEL: (213) 420-5700
**PIONEER ELECTRONIC (EUROPE) N.V.** Keetberglaan 1, 2740 Beveren, Belgium TEL: 03/775·28·08
**PIONEER ELECTRONICS AUSTRALIA PTY. LTD.** 178-184 Boundary Road, Braeside, Victoria 3195, Australia
TEL: (03) 580-9911

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# 1. DISASSEMBLY

Note: Always use new washer and E-washer at the time of reassembling.

## ● Dismounting the Cassette Holder (Fig. 1)

(1) Make the claw straight.
(2) Remove the spring.
(3) The cassette holder is gripped at 2 points, shown by arrows. So, shift it toward the left and pull it out from above.

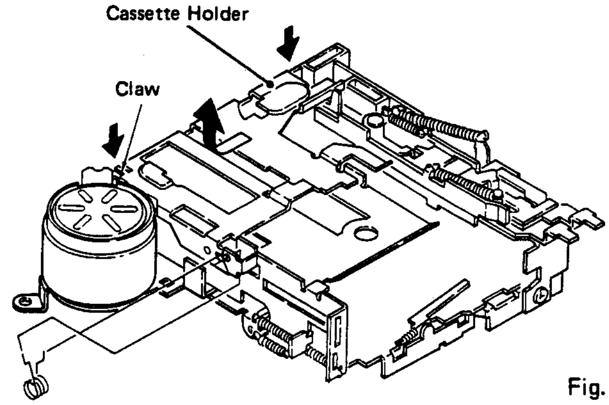

Cassette Holder
Claw

Fig. 1

## ● Dismounting the Reel Unit (Fig. 2)

(1) Take off the washer.
(2) Remove the reel unit.

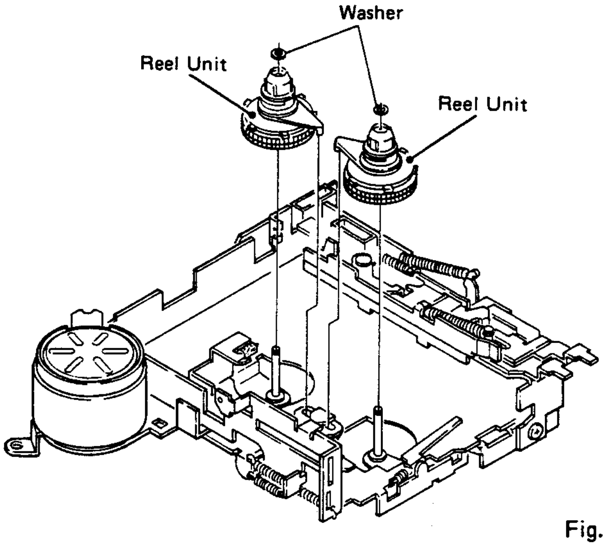

Washer
Reel Unit
Reel Unit

Fig. 2

## ● Dismounting the Flywheels (Fig. 3)

(1) Take off the E-washer. Retain washer properly to ensure it doesn't get lost.
(2) Remove the flywheels. Do not mistake the N and R flywheels (otherwise tape speed would change).

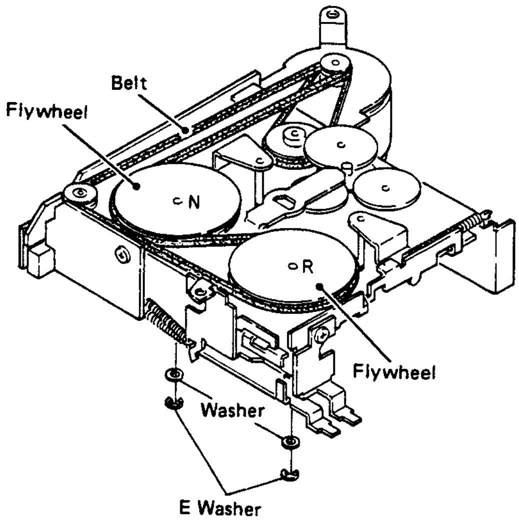

Belt
Flywheel
N
R
Flywheel
Washer
E Washer

Fig. 3

## • Dismounting the Head (Fig. 4, 5)

(1) Remove the P.C. board unit, after taking off its fastening screw.
Note: Take care not to change the setting of FWD/REV switch of P.C. board.

(2) Remove the 3 springs.
(3) Take off E-washer.
(4) Remove the lever unit (EJ).
(5) Take off the lever (FF). When reassembling, make sure that the spring comes in front of arm unit.
(6) Take off lever (REW).
(7) Remove the head after taking off its 2 retaining screws.
Note: The head can be dismounted, even without taking off the levers given in above steps (5) & (6).

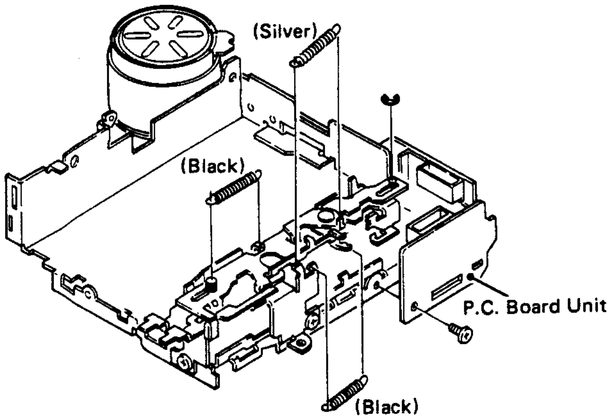

(Silver)
(Black)
P.C. Board Unit
(Black)

Fig. 4

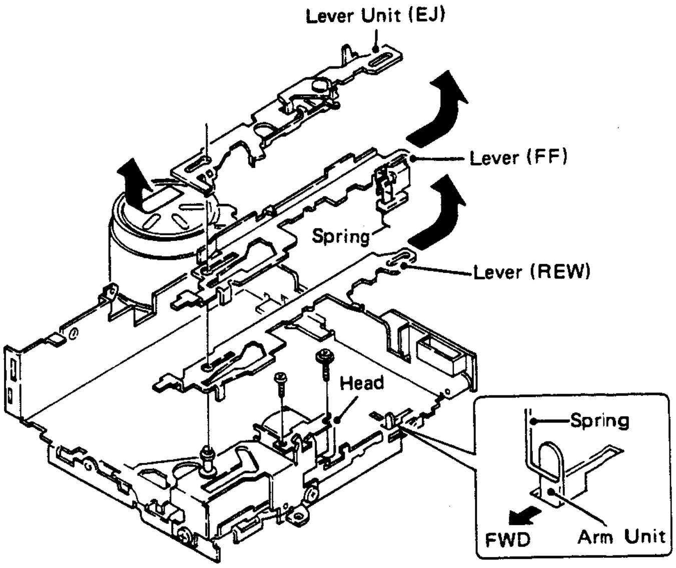

Lever Unit (EJ)
Lever (FF)
Spring
Lever (REW)
Head
Spring
FWD
Arm Unit

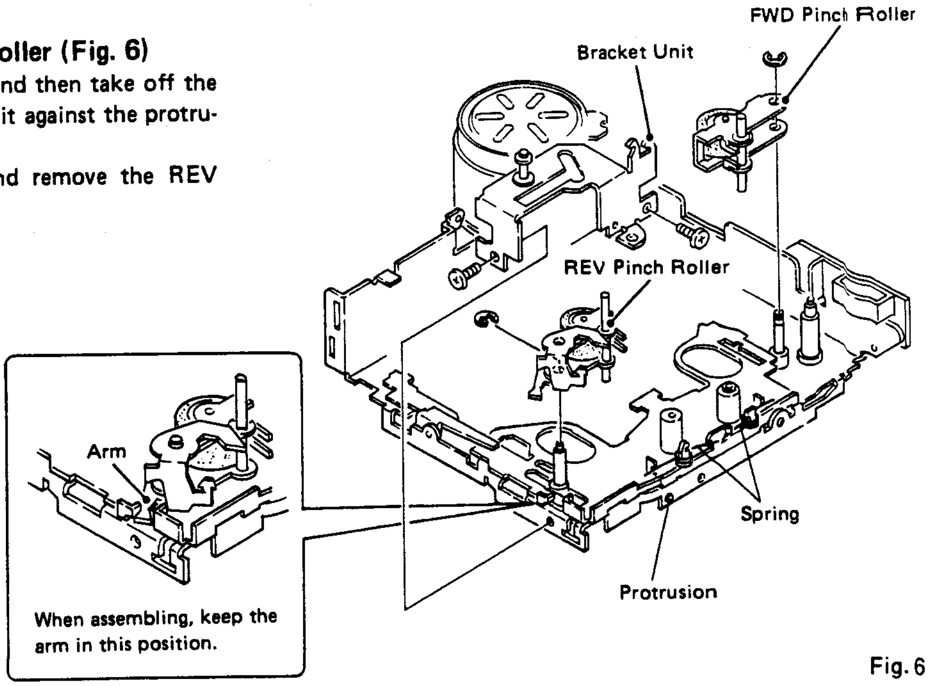
Fig. 5

## • Dismounting the FWD Pinch Roller (Fig. 6)

(1) Remove E-washer & spring, and then take off the FWD pinch roller.

## • Dismounting the REV Pinch Roller (Fig. 6)

(1) Remove the 2 retaining screws, and then take off the bracket unit, taking care not to hit against the protrusion.
(2) Take off E-washer & spring, and remove the REV pinch roller.


FWD Pinch Roller
Bracket Unit
REV Pinch Roller
Spring
Protrusion
Arm

When assembling, keep the arm in this position.

Fig. 6

# 2. MECHANISM DESCRIPTION

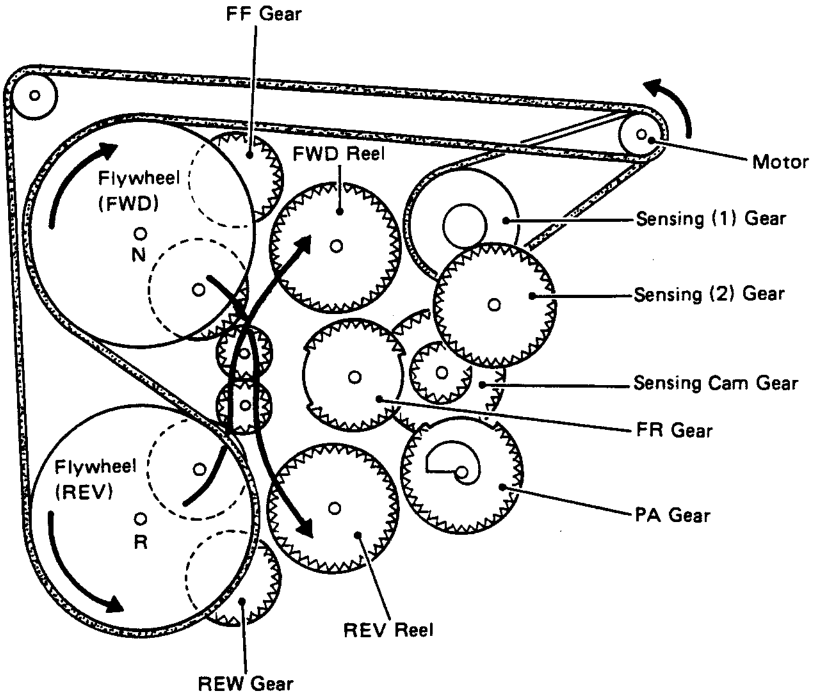

FF Gear
Motor
FWD Reel
Flywheel (FWD)
N
Sensing (1) Gear
Sensing (2) Gear
Sensing Cam Gear
FR Gear
Flywheel (REV)
R
PA Gear
REV Reel
REW Gear

Fig. 7 Transmission of turning force at the time of PLAY (Flywheel →Reel)

## ● Loading & Playing the Cassette Tape

(1) When a cassette tape is inserted, a lever pushes against an arm, which then turns ON the motor and tape/tuner (tape side) switches, in this given order.

(2) When a cassette tape is set, the arm of Fig. 9 (collision preventing) gets depressed, putting the head base in forward movable state.

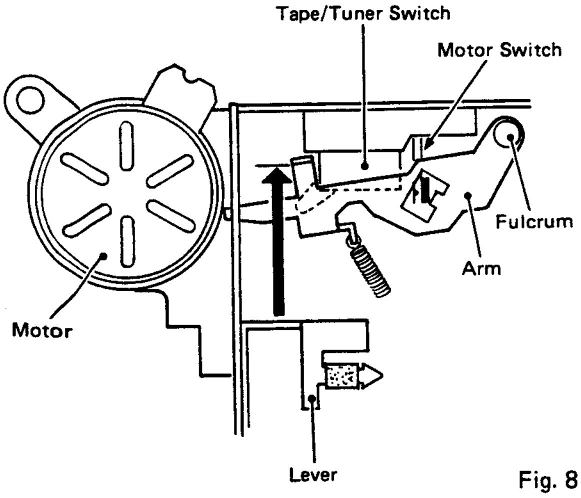

Tape/Tuner Switch
Motor Switch
Fulcrum
Arm
Motor
Lever

Fig. 8

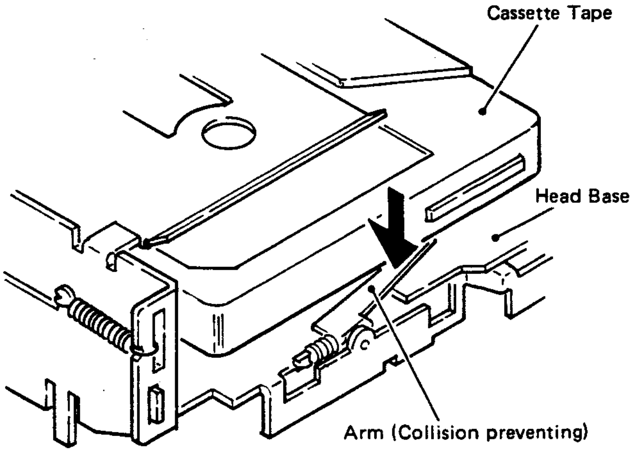

Cassette Tape
Head Base
Arm (Collision preventing)

Fig. 9

(3) As motor switch turns ON, the motor starts running, transmitting its rotations toward the arrow direction shown in the Fig. 10. As a result, flywheel (FWD) runs forward and flywheel (REV) runs backward.

(4) REW gear then transmits the rotations of flywheel (REV) to REV reel, putting the mechanism in REW state and eliminating tape slackening (ATSC). At this time, the FWD reel is locked by the ratchet mentioned in step (14).

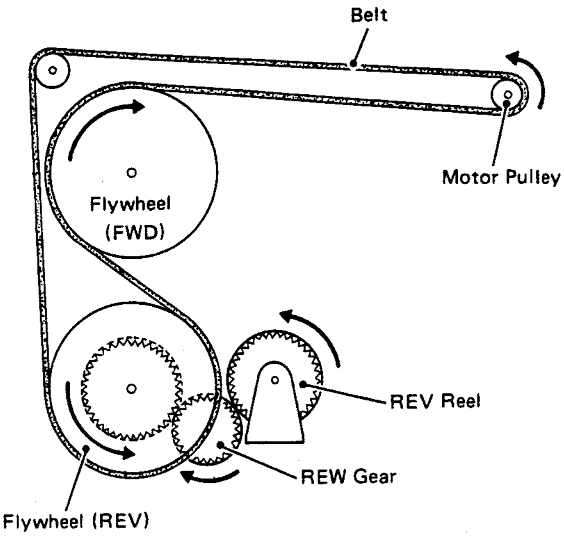

Belt
Motor Pulley
Flywheel (FWD)
REV Reel
REW Gear
Flywheel (REV)

Fig. 10

(5) In Fig. 11, the reel arms of FWD & REV reels are engaged on the sensing arm. A slight friction causes the reel arms to get locked onto the reels. While REV reel is rotating, the reel arms and sensing lever keep shifting laterally along the arrow direction ① of Fig. 11. Right side movement of the reel arm is caused by the rotation of REV reel; while the left side movement is caused by protrusion of the sensing lever through the inner groove of sensing cam gear.

(6) REV reel stops as soon as tape slackening is eliminated (the gear of reel is driven by REW gear).

(7) As soon as the reel stops, the operation of above step (5) sends the reel arm toward the left.
Consequently, the protrusion of sensing lever moves along the orbit of dotted line, causing the sensing lever to get pushed by cam and move along arrow ②.

(8) Sensing lever turns the ATSC lock arm along the direction of arrow ③ .

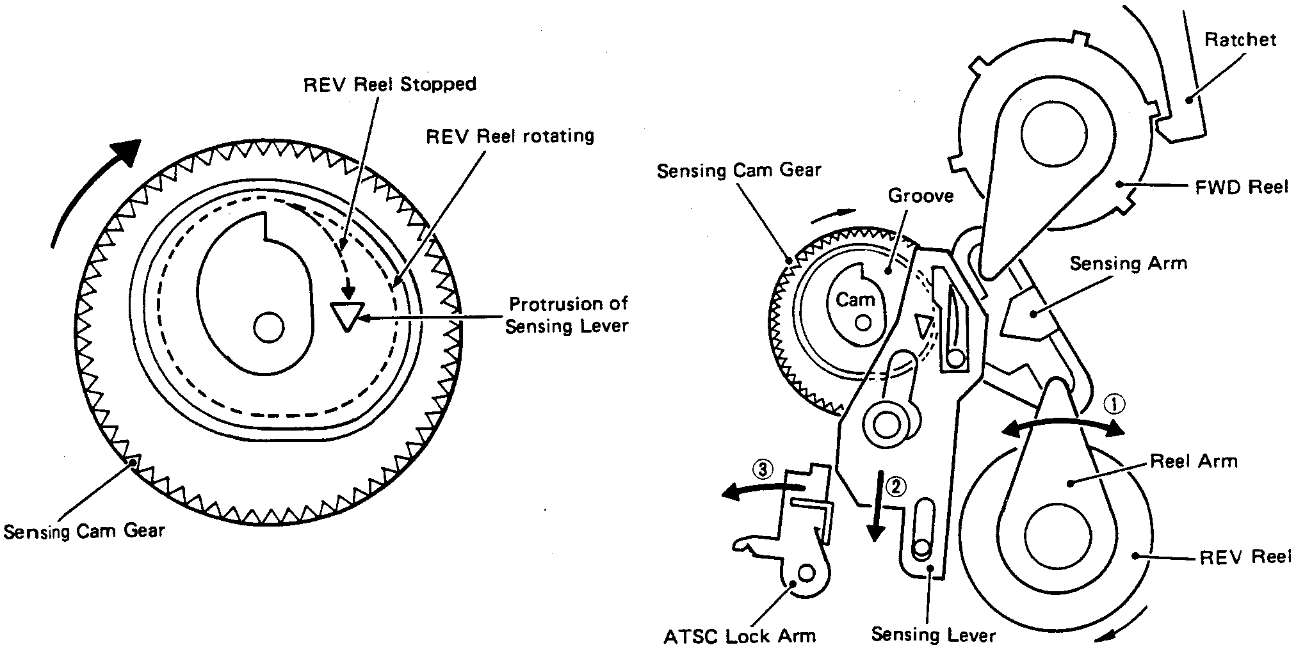

REV Reel Stopped
REV Reel rotating
Protrusion of Sensing Lever
Sensing Cam Gear
Ratchet
Sensing Cam Gear
Groove
FWD Reel
Cam
Sensing Arm
①
Reel Arm
REV Reel
③
②
ATSC Lock Arm
Sensing Lever

Fig. 11

(9) In ejected state, PA gear remains locked by ATSC lock arm, as shown in Fig. 13. The force along arrow ③ caused by the operation of above step (8), releases the lock if PA gear, whereupon the PA gear is made to rotate slightly along arrow ④ by the gear driving spring. As a result, the PA gear engages with sensing cam gear, and proceeds to turn through 1 more rotation. The cam of PA gear then causes the HD drawing arm and key-off lock arm to move along arrow ⑤. The HD drawing arm pushes against a lever, and a spring attached to the lever causes the head base to shift along arrow ⑥

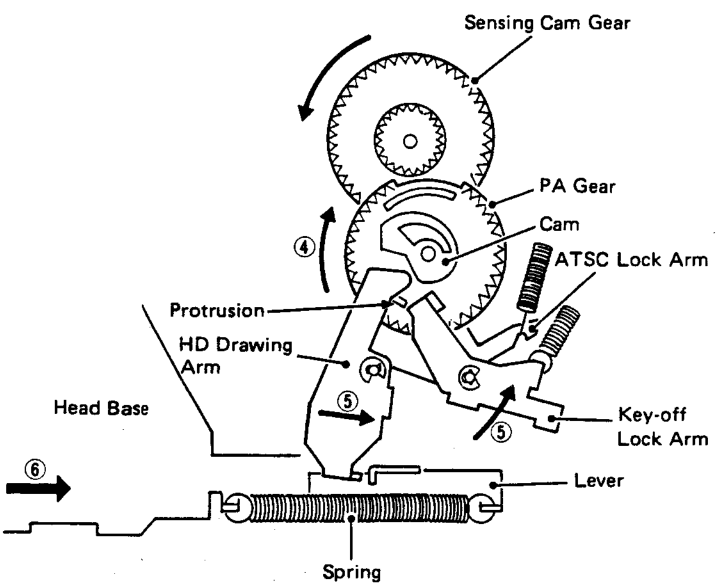

Sensing Cam Gear
PA Gear
Cam
ATSC Lock Arm
④
Protrusion
HD Drawing Arm
Head Base
⑤
⑤
Key-off Lock Arm
⑥
Lever
Spring

Fig. 12

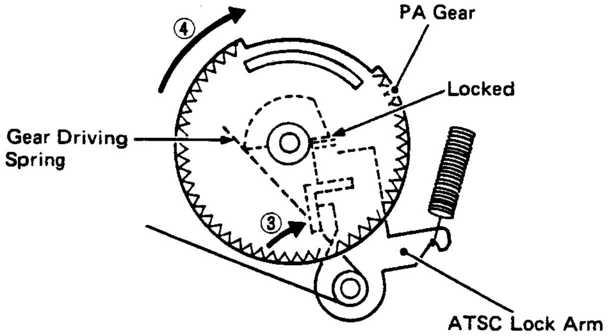

④
PA Gear
Locked
Gear Driving Spring
③
ATSC Lock Arm

Fig. 13

(10) With Music Search (MS) (Fig. 14)
The key-off lock arm is pushed toward the outer periphery of PA gear by its cam. As a result, the key-off lock lever shifts along the direction of arrow ⑦, and the tip of solenoid attached at the end of lock lever is pulled in and gets locked into the solenoid (the solenoid is turned by motor switch).
Without MS (Fig. 15)
The key-off lock arm is pushed toward the outer periphery of PA gear.

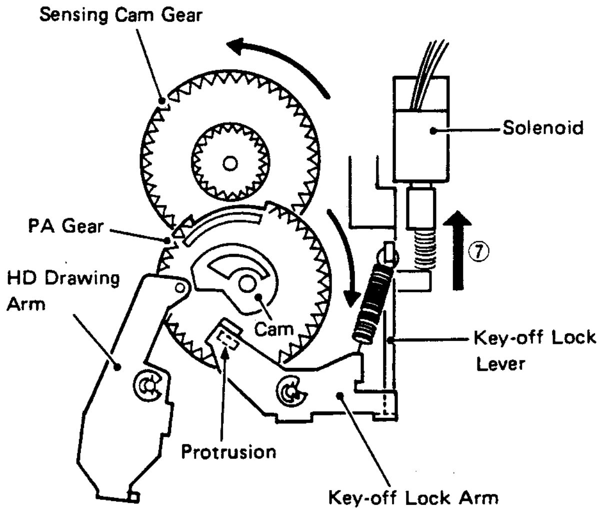

Sensing Cam Gear
Solenoid
PA Gear
HD Drawing Arm
⑦
Cam
Key-off Lock Lever
Protrusion
Key-off Lock Arm

Fig. 14 Stopped state after turning through about 1 rotation (with MS)

(11) The key-off lock arm engages on the protrusion of PA gear, and concurrently the turning force of sensing cam gear is lost at the no-teeth part PA gear, causing the PA gear to halt.

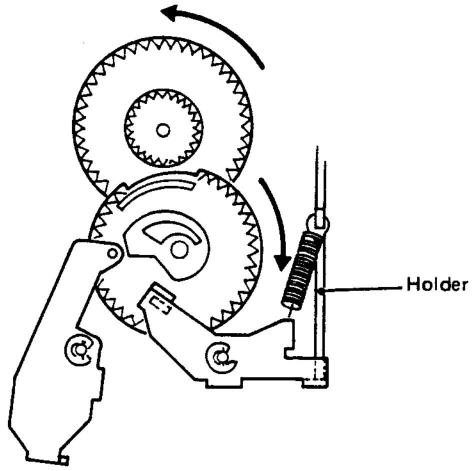


Fig. 15 Stopped state after turning through about 1 rotation (without MS)

(12) Through a lever & spring, the HD drawing arm causes the head base to shift along the direction of arrow ⑥, in turn drawing out the HD. This movement of head base is accompanied by the following operation.

(13) The spring A attached to head base causes the pinch roller to begin movement.

(14) Point A of head base shifts the ratchet along arrow direction ⑧, causing the FWD reel to get detached from it.

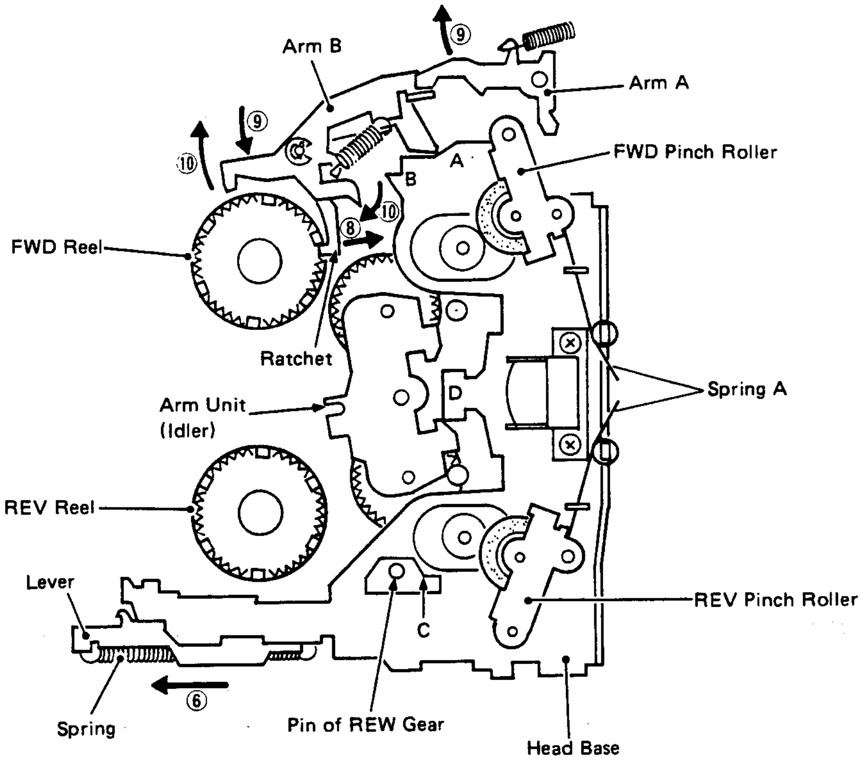
(15) As the FWD pinch roller runs forward, arm A moves along the direction of arrow ⑨, causing arm B to get locked on FWD reel.

(16) Point C of head base pushes against the pin of REW gear, disengaging the REW gear from REV reel.

(17) Point B of head base pushes arm B along arrow direction ⑩, making the FWD reel free.

(18) Spring A causes either the FWD or REV pinch roller to contact the capstan, depending on the existing status (FWD PLAY or REV PLAY) before the mechanism came to halt.

(19) As point D of head base pushes against arm unit (idler), the play gear engages onto either the FWD or REV reel, depending on the existing status before the mechanism to halt.



⑨
Arm B
Arm A
⑨
⑩
FWD Pinch Roller
A
B
⑩
⑧
FWD Reel
Ratchet
Spring A
Arm Unit
(Idler)
D
REV Reel
Lever
REV Pinch Roller
C
⑥
Spring
Pin of REW Gear
Head Base

Fig. 16

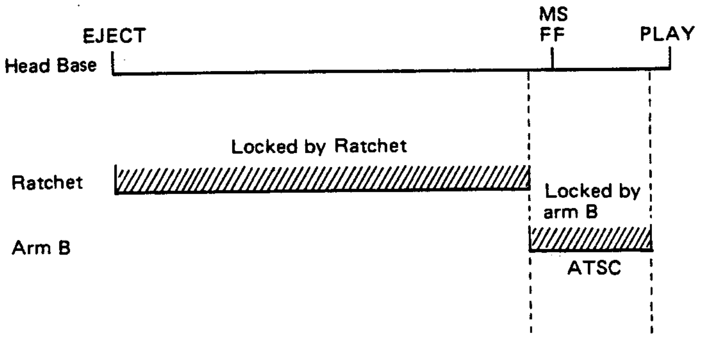


Fig. 17 FWD Reel locking timing

## ● Sensing Operation (Fig. 18, 19, 20)

### ○ Auto

1. While playing, since the sensing lever shifts laterally as given in above step (5), the cam of sensing cam gear never pushes against the sensing lever. Upon reaching the end of tape, the cam pushes against sensing lever, and point E goes in to push the arm along arrow direction ⑪.
2. The arm contacts the stopper of FR gear to stop the gear from running. Since the FR gear receives the force along arrow direction ⑫ of spring A, through REV pinch roller & arm (FR), it always tends to rotate along arrow direction ⑬.
3. As soon as the arm disengages from stopper in above step 1, the FR gear engages with sensing cam gear, causing the arm to rotate until contacting the opposite side stopper.
4. The rotation of FR gear sends the arm (FR) toward arrow direction ⑭, in turn switching over the pinch rollers. This switch over is done by the movement of arm (FR), including that of the arm unit (idler) also.

### ○ Manual

1. When the manual direction switch over lever of Fig. 18 is pushed, the arm moves along arrow direction ⑪. Further operation is identical to that in auto.
2. If the manual direction switch over lever is held pushed, the inner protrusion of FR gear as shown in Fig. 19 contacts spring B of the arm, and stops after turning through half rotation.

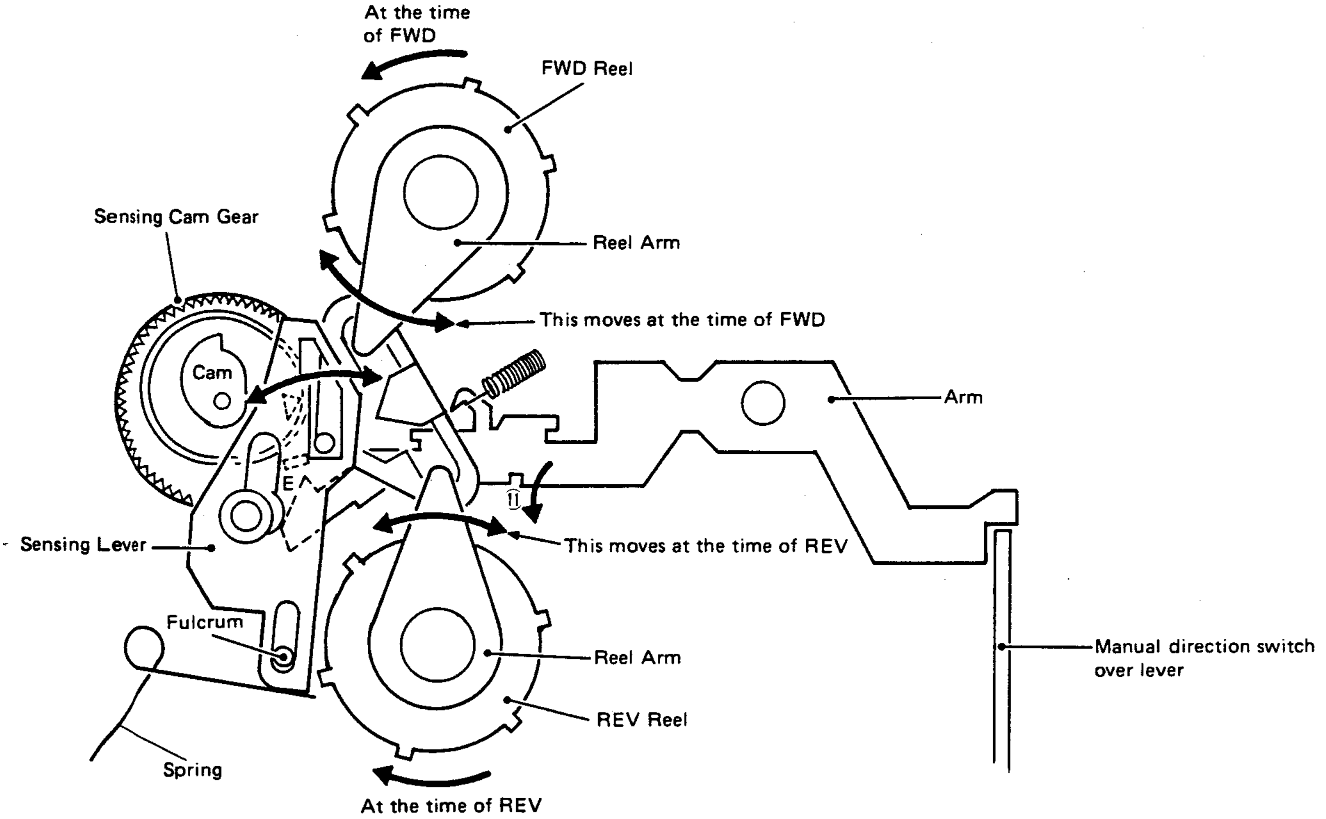

At the time of FWD
FWD Reel
Sensing Cam Gear
Reel Arm
This moves at the time of FWD
Cam
Arm
E
11
Sensing Lever
This moves at the time of REV
Fulcrum
Reel Arm
Manual direction switch over lever
REV Reel
Spring
At the time of REV

Fig. 18

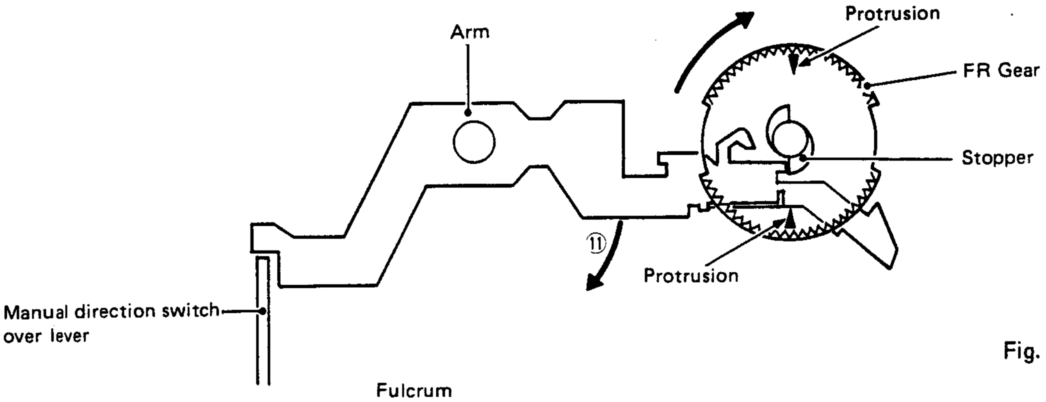

Arm
Protrusion
FR Gear
Stopper
⑪
Protrusion
Manual direction switch over lever

Fig. 19

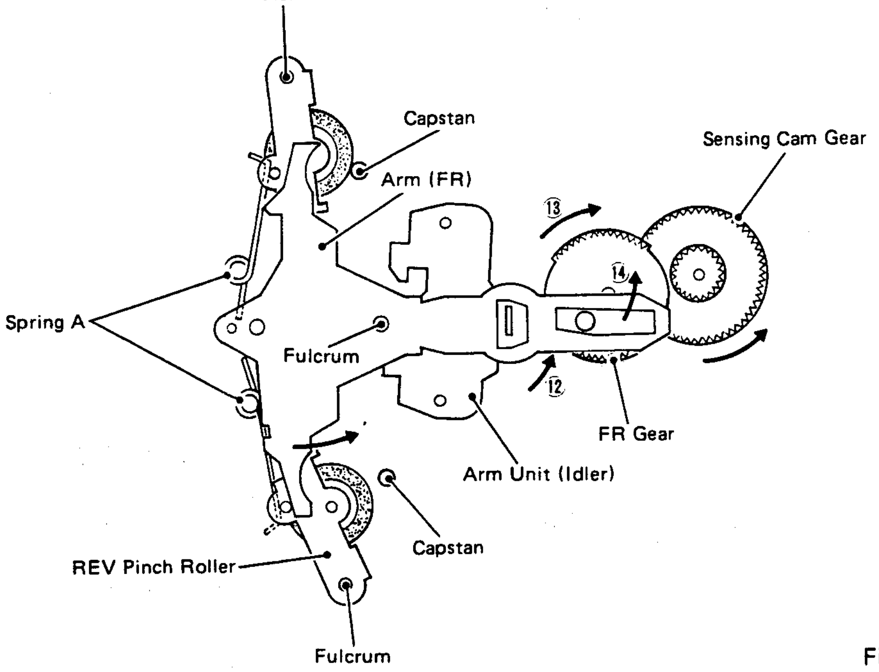

Fulcrum
Capstan
Arm (FR)
Sensing Cam Gear
⑬
⑭
Spring A
Fulcrum
⑫
FR Gear
Arm Unit (Idler)
Capstan
REV Pinch Roller
Fulcrum

Fig. 20

## • Sensing release Mechanism (when drawing out the Head)

1. If the sensing lever is held pushed by sensing cam gear until the head is drawn out, after the lock of PA gear has been released by it, FWD/REV switch over takes place.

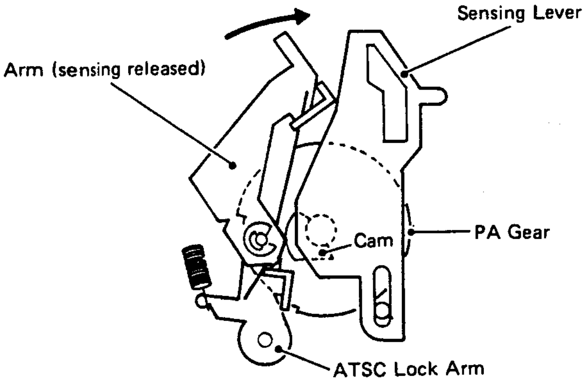

Sensing Lever
Arm (sensing released)
Cam
PA Gear
ATSC Lock Arm

Fig. 21 Drawing out the HD (Sensing released)

2. To prevent this, the arm (sensing released) is held pushed toward arrow direction, by the cam of PA gear, through ATSC lock arm, as shown in Fig. 21. This prevents FWD/REV switch over by keeping the cam of sensing cam gear away from the sensing lever.

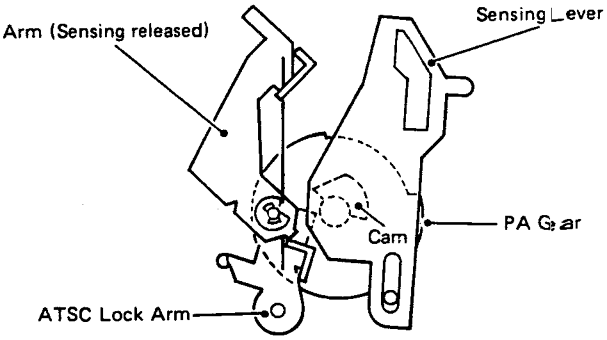

Arm (Sensing released)
Sensing Lever
Cam
PA Gear
ATSC Lock Arm

Fig. 22 At the time of PLAY (Sensing operation)

## • FF/REW Mechanism (when running FWD)

1. When FF, REW lever is pushed, arm D causes the head base to return upto FF/REW position. The lever makes arm C to rotate along arrow direction ⑫ , which then turns ON the mute switch. When pushed further, it gets locked by arm C.
2. The returning of head base also causes the arm unit (idler) to return, and the play gear is detached from the reel.
3. When REW lever is pushed, the head base returns, causing the pin of REW gear also to return to original position, whereby the flywheel (REV), REW gear, and REV reel get engaged together, instating REW mode.
4. When FF lever is pushed, the arm unit (FF) gets pressed, causing the flywheel (FWD), FWD reel, and FF gear to get engaged, again instating FF mode. At this time, REW gear detaches from REV reel and flywheel (REV) due to spring tension.
5. At the time of MS operation, the solenoid turns from OFF to ON while in FF/REW state, and play mode is instated as the head base in returned.

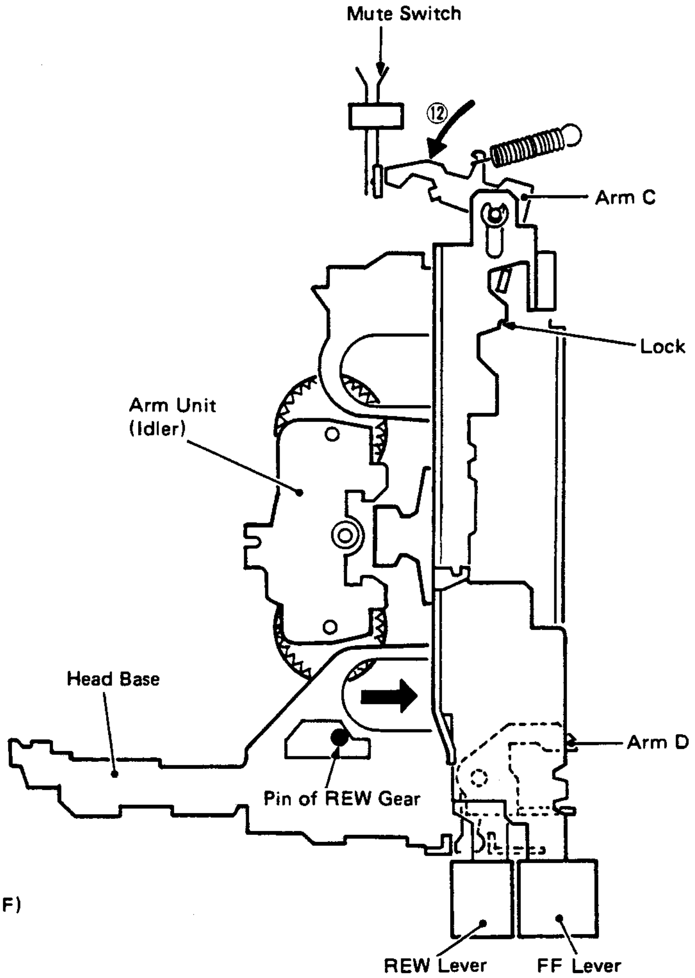

Mute Switch
⑫
Arm C
Lock
Arm Unit (Idler)
Head Base
Arm D
Pin of REW Gear
REW Lever
FF Lever

Fig. 23

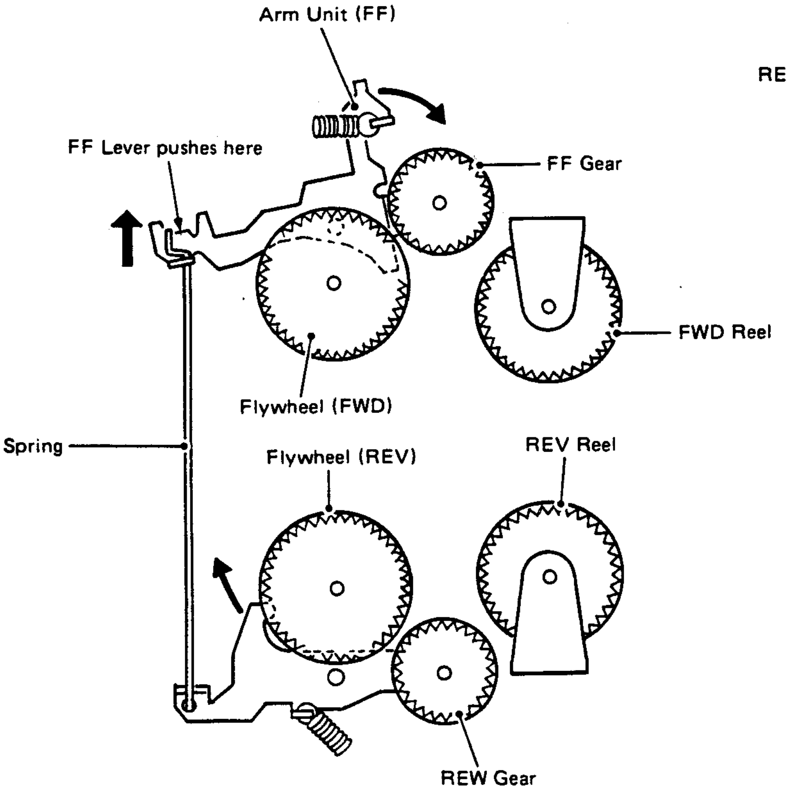

Arm Unit (FF)
FF Lever pushes here
FF Gear
FWD Reel
Flywheel (FWD)
Spring
Flywheel (REV)
REV Reel
REW Gear

Fig. 24 At the time of FF

## ● EJECT

1. If FF, REW levers are concurrently pushed, the arm gets caught at point F, sending the lever toward arrow direction.
2. Point G pushes against the arm of Fig. 23, causing the head base to return back.
3. As the head base returns, arm E of Fig. 26 moves along arrow direction ⑬, in turn pushing the key-off lock arm. Thereby, the lock of PA gear gets released, and play state is cancelled.
4. Point H of the lever of Fig. 25 pushes against the cassette holder to eject the cassette tape.

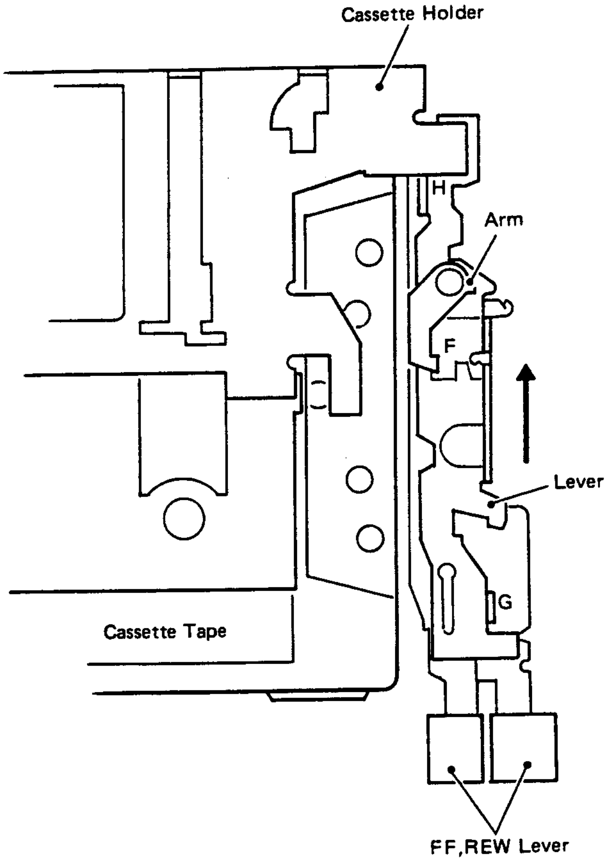

Cassette Holder
H
Arm
F
Lever
G
Cassette Tape
FF,REW Lever

Fig. 25

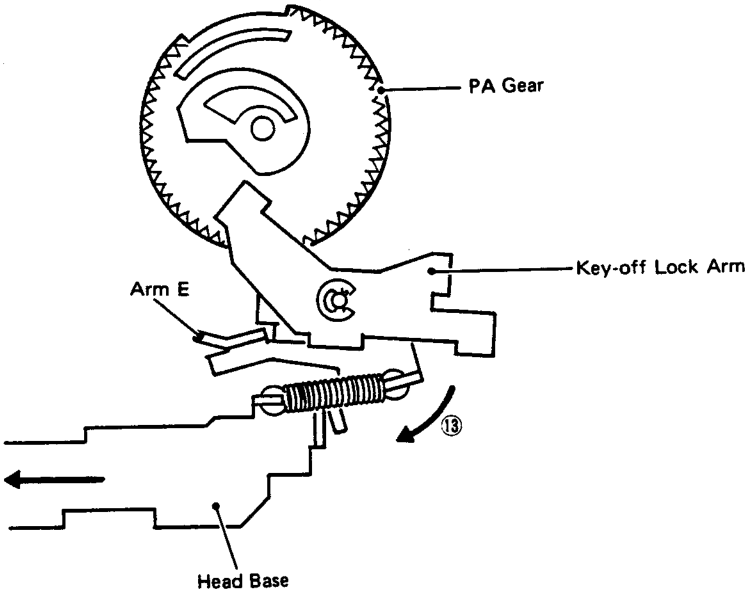

PA Gear
Key-off Lock Arm
Arm E
⑬
Head Base

Fig. 26

# 3. ADJUSTMENT

## 3.1 AZIMUTH ADJUSTMENT (Fig. 27)

- **To Adjust**

1. Play "A" side of STD-341A (10kHz, −20dB). Adjust each screw for maximum output in forward and reverse directions.
2. Play "B" side in forward and reverse directions to confirm adjustment.

## 3.2 TAPE SPEED ADJUSTMENT (Fig. 27)

- **To Adjust**

1. Reproduce STD-301 (3kHz, −10dB). Adjust the semi-fixed resistor so that the frequency counter shows 3,010Hz (+30Hz, −30Hz).

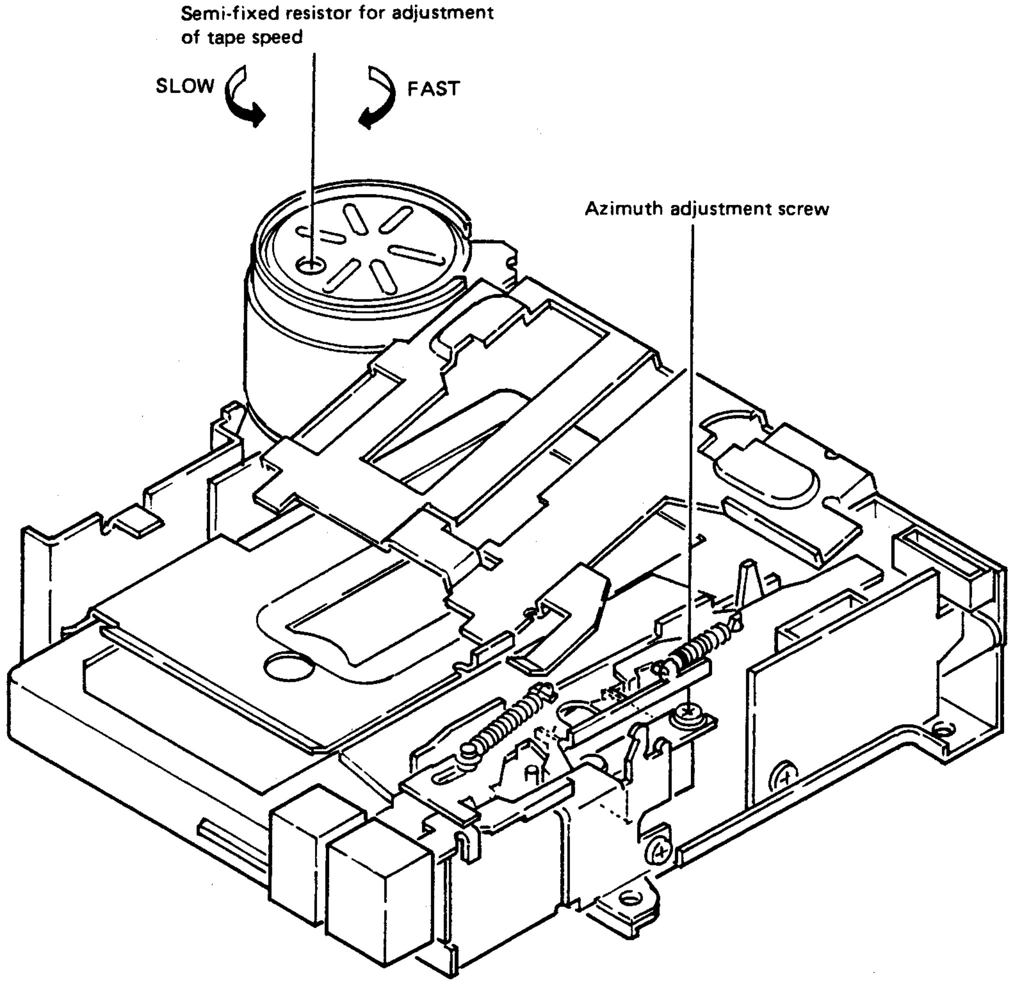
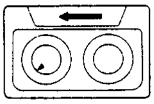
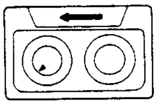
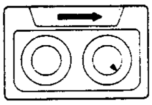
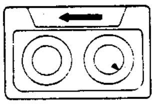

Semi-fixed resistor for adjustment
of tape speed
SLOW
FAST
Azimuth adjustment screw

Fig. 27

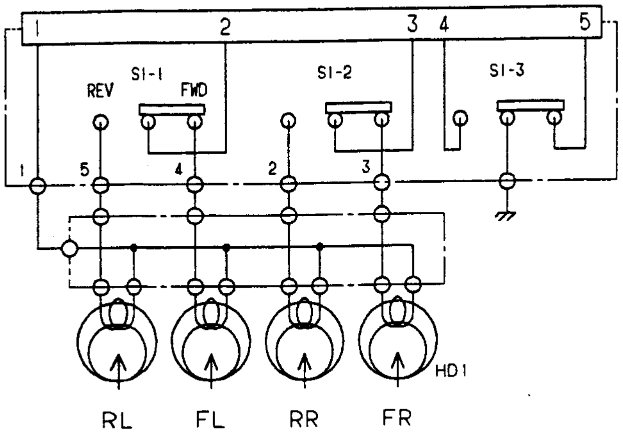
## 3.3 CHECK POINTS OF CASSETTE MECHANISM

| | | |
|---|---|---|
| Confirm the following items when replacing parts of the cassette mechanism. | ■ Tape speed deviation:<br>$3{,}000^{+90}_{-30}$ Hz<br>(4.76cm/s $^{+3}_{-1}$ %)<br>Using an STD-301, measure the speed at the start and end of winding and take the maximum value. Measuring time shall be 5 ∿ 6 seconds. | ■ Wow and flutter:<br>Less than 0.20% (WRMS)<br>Using an STD-301, measure the wow and flutter at the start and end of winding and take the maximum value. If values indicated by the pointer vary considerably, adjust to 70% of the minimum and maximum values. Measuring time shall be 5 ∿ 6 seconds. |
| ■ Fast forward and rewinding time:<br>95∿115 seconds<br>Using a C-60, set to fast forward and rewind, and measure the time with a stop watch. | ■ Winding torque:<br>39∿65g·cm<br><br>Using a cassette type torque meter (100 g·cm), measure the minimum value while in the play mode. Measuring time shall be 5 ∿ 6 seconds. | ■ F.F. torque:<br>110∿70g·cm<br><br>Using a cassette type torque meter (120 g·cm), measure the value when the tape stops in the F.F. mode. |
| ■ REW torque:<br>110∿70g·cm<br><br>Using a cassette type torque meter (120 g·cm), measure the value when the tape stops in the REW mode. | ■ Back tension torque:<br>2∿6g·cm<br><br>After setting in the REW mode without loading a cassette tape for 5 minutes, measure the back tension torque in the play mode, using a cassette type torque meter. | ■ Cassette loading force:<br>Less than 1.5kg<br>Push the center of the cassette and measure the force with a tension meter (3 kg). |
| ■ Eject force:<br>Less than 4kg<br>Using a tension meter (5 kg), measure eject force from play mode to point at which cassette is ejected. | | |

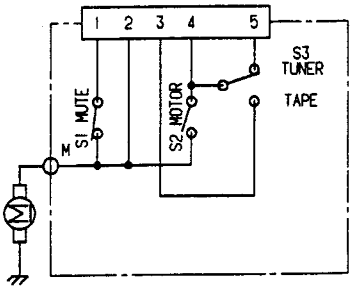
# 4. CIRCUIT DIAGRAM & PATTERNS

- **Without MS**

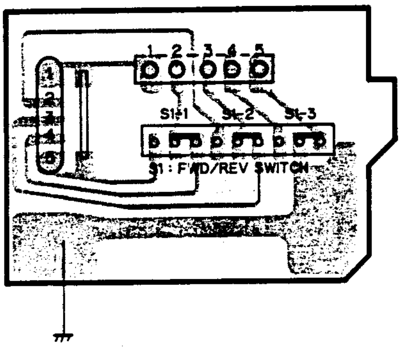
**P.C. BOARD UNIT**


1
2
3
4
5
REV
S1-1
FWD
S1-2
S1-3
HD1
RL
FL
RR
FR

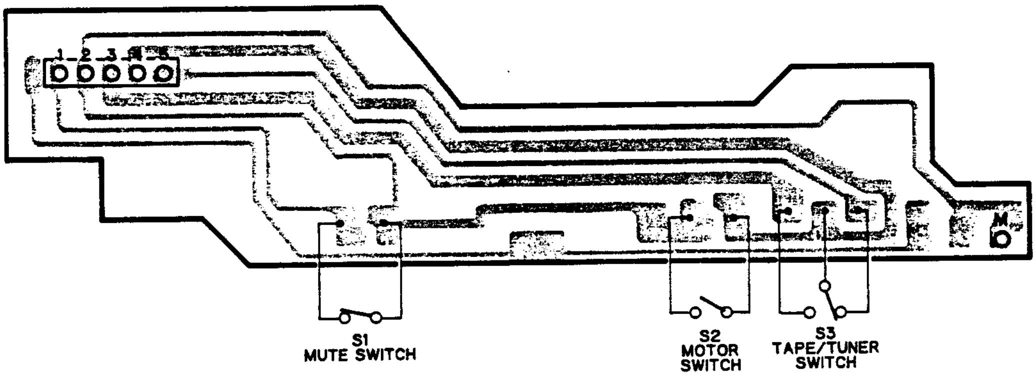
**SWITCH P.C. BOARD**


1
2
3
4
5
S3
TUNER
TAPE
S1 MUTE
S2 MOTOR
M

**P.C. BOARD UNIT**

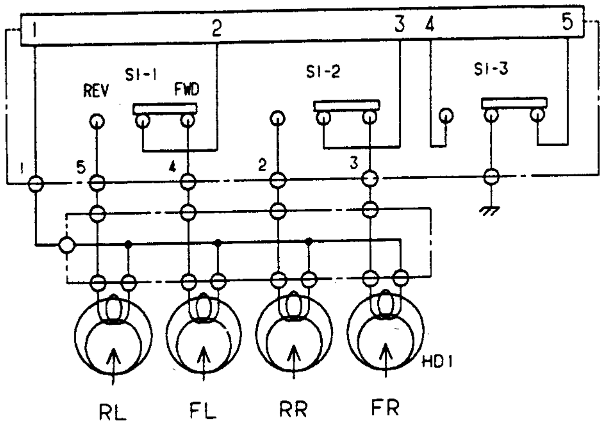

1
2
3
4
5
S1-1
S1-2
S1-3
S1 : FWD/REV SWITCH

**SWITCH P.C. BOARD**

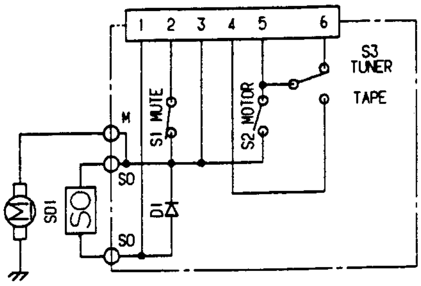

1
2
3
4
5
M
S1
MUTE SWITCH
S2
MOTOR
SWITCH
S3
TAPE/TUNER
SWITCH

- **With MS**

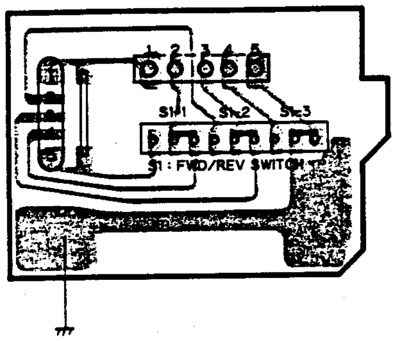
**P.C. BOARD UNIT**


1
2
3
4
5
S1-1
S1-2
S1-3
REV
FWD
1
5
4
2
3
HD1
RL
FL
RR
FR

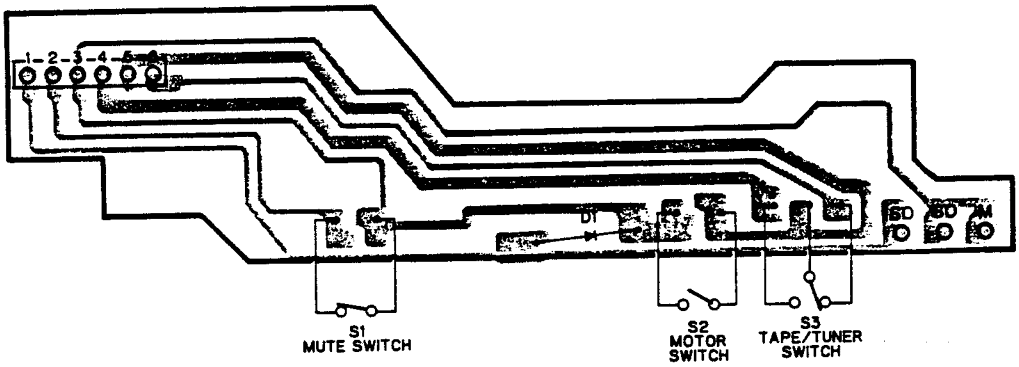
**SWITCH P.C. BOARD**


1
2
3
4
5
6
S3
TUNER
TAPE
S1 MUTE
S2 MOTOR
M
SO
SO
SO1
D1

**P.C. BOARD UNIT**


1
2
3
4
5
S1-1
S1-2
S1-3
S1 : FWD/REV SWITCH

**SWITCH P.C. BOARD**


1
2
3
4
5
6
D1
SO
SO
M
S1
MUTE SWITCH
S2
MOTOR
SWITCH
S3
TAPE/TUNER
SWITCH